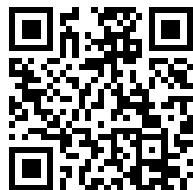
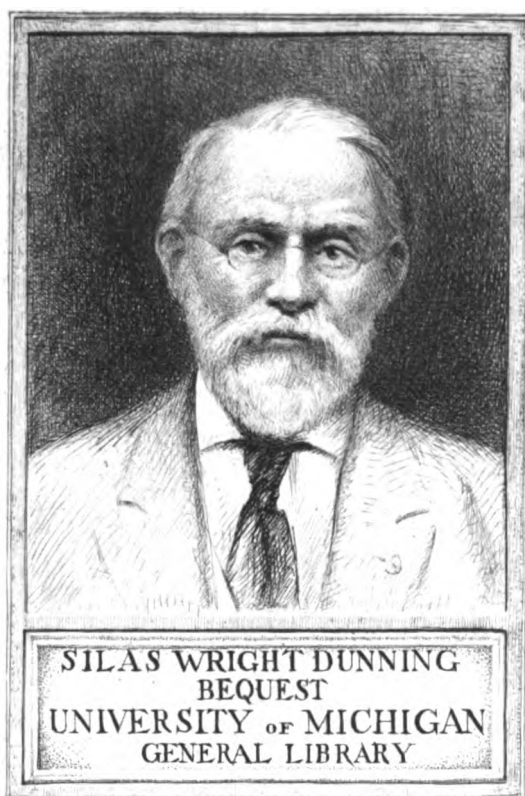

This is a reproduction of a library book that was digitized by Google as part of an ongoing effort to preserve the information in books and make it universally accessible.

GoogleTM books

<https://books.google.com>



B 1,039,370



SILAS WRIGHT DUNNING
BEQUEST
UNIVERSITY OF MICHIGAN
GENERAL LIBRARY

22
1
-456

*Dunning
Heffer
9-18-36
32691*

CONTENTS.

VOL. I. No. 1.

ORIGINAL PAPERS.

	PAGE.
1. On the Dress of the Army of India, 1	COMMON SENSE ... 1
2. Rough Notes on the Formation, F	piment, and Despatch of a force
from India for service in China, Egy	or elsewhere beyond sea, by Lieu-
tenant-Colonel ROBERTS, V. C., R. A.	... 17
3. On the Dress of the British Army	ndia, European and Native, by
LORD LYON 35
4. Notes on the Field Equipment of	ps, by Lieutenant-Colonel C. M.
MacGREGOR, General Staff Corps	... 47

SHORT NOTES ON

SIONAL SUBJECTS.

1. Scheme to promote recruiting for th	ular Army, by Major LYNDEN
BELL, 6th Royal Regiment 63
2. Notes on Non-Commissioned Offic	hools in Prussia, by Captain
E. CHAPMAN, R. H. A. 67

CORRE

NCE.

1. Letter on the desirability of greater	s being afforded to Officers
of the Indian Army to attend the	ilege at home ... 71
2. Letter on the advisability of encou	Officers to make reports of
their travels while on leave 73

VOL. I. 2.

ORIGINAL PERS.

1. On the Officering of the Native Infantry	by Lieutenant Colonel G.
HUNTER THOMPSON, 19th Punjab Infantry	... 1
2. On the Constitution, Equipment, Pay, &	of the Bengal Native Infantry,
by Lieut.-Colonel G. HUNTER THOMPSON,	9th Punjab Infantry ... 5
3. Royal Artillery Organisation and Retirement	ts, by Lieutenant Colonel W.
GREY, Royal Artillery 9
4. On the Carriage of Regimental Reserve Am	munition for Breech-loaders in
Mountain Warfare, by Colonel C. C. OSBORNE,	6th Royal Regiment ... 19
5. On the Defence of the North-Eastern Frontier of India,	by S. N. S. ... 25
6. On Pioneers, by Captain A. DUNLOP ANDERSON,	23rd Pioneers ... 33

LECTURE.

On the State and Prospects of the Indian Army, by Major A. CORY, Bengal	Staff Corps ... 39
---	--------------------

DEBATE

On the Education of Staff Officers, held on 13th June, 18 ¹	... 59
--	--------

NOTES.

1. On the Necessity of Army receiving Tactical Training	by Lieutenant Co-
lonel Roberts, V.C., R. A. 67



CONTENTS.

VOL. I. No. 4.

ORIGINAL PAPERS.

	<i>Page.</i>
1. Military Items, by Lieutenant G. C. BAYLY, R. A., ...	1
2. Notes on the Goorkhas, by "GOORRHA," ...	17
3. On training of the Staff in India, by Lieutenant R. J. MORGAN, Bengal Staff Corps, ...	33

SELECTIONS.

1. Field Operations on the Sylhet and Cachar Frontiers in 1871, by Brigadier-General GEORGE BOURCHIER, C. B., Commanding Eastern Frontier District, ...	41
2. Record of the 21st Regiment, Bombay Native Infantry or Marine Battalion, ...	50

TRANSLATION.

1. Belgian Military Conferences, No. 1, 1st Series of 1870, "Infantry Tactics," by Captain CHARLES PONTUS, of the Grenadier Regiment, Translated by Major W. SIDDOXS YOUNG, Bengal Staff Corps, ...	70
---	----

NOTES.

1. Insubordination, its causes and prevention, by Sergeant-Major GEORGE ACRES, 1st Battalion, 17th Regiment, ...	93
2. Camps of Instruction, by Major H. WAYELL, 41st, The Welsh Regiment, ...	98

INVENTIONS.

1. Field Writing Case, by Lieutenant H. HUTCHINSON, Adjutant, 1-14th Regiment, ...	102
2. Improvements in Rocket Projectiles for purposes of War, by Major ABBINGTON TAYLOR, 8th Regiment, Bengal Native Infantry, ...	104
3. New Pattern belts for Pick-axes and other Tools carried by the men of our Pioneer Corps, by Captain T. N. WALKER, 32nd Punjab Pioneers, ...	106

CORRESPONDENCE.

1. On the Establishment of a Veterinary School in India, by Major H. MELVILLE, Commanding 19th Bengal Lancers, ...	107
--	-----

* * * *For the facts and opinions advanced in the above papers, the authors alone are responsible.*

CONTENTS.

VOL. I. No. 5.

ORIGINAL PAPERS.

I. Military Report on the River Irrawaddy from Ava to Bamó, by LIEUTENANT EDMOND BROWNE, Instructor in Musketry, and Interpreter, 2nd Battalion, 21st Fusiliers	1
II. Historical Record of the 10th (or Travancore) Regiment, Bombay Native Infantry, by COLONEL J. FIELD, C. B., commanding 10th Regiment, Native Light Infantry	12
III. Note on General Chanzy's Campaign of the 2nd Army of the Loire	38

SELECTIONS.

I. The Wellington Despatches	44
II. Soldiers Pocket Book	49
III. Commentaries of Napoleon I.	52
IV. Tactics of the Prussian Infantry	80

GLEANINGS.

I. The Sea-forts at Spithead	86
II. The Staff College	93
III. Practical Instruction for Staff Officers	97
IV. Health of Sailors and Soldiers	101

TRANSLATIONS.

I. The Battle Field of Sedan, by R. G. L.	103
II. Extract from the Prussian "Militär Wochenblatt" a remarkable article on the proposed reorganization of the French Army	112

INVENTIONS.

I. Rifled Guns, by MAJOR ADDINGTON TAYLOR, 8th Regiment, Bengal N. I.	117
II. On punkah pulling by machinery for Barracks in India, by LIEUTENANT H. TURNBULL, 6th Regiment	120
III. The Heliograph or Sun Telegraph by HENRY MANCE, Esq., Superintendent, in charge Kurrachee Station, Indo-European Telegraph Department	123

CORRESPONDENCE.

I. Sketch of a Surveying Compass by CAPTAIN J. M. TROTTER, Bengal Infantry	131
--	-----

* * * For the facts and opinions advanced in the above papers, the authors alone are responsible.

CONTENTS.

~~~~~

VOL. I. No. 6.

### ORIGINAL PAPERS.

|                                                                                                                                                           |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| I. On Military Law, as a branch of an Officer's study, by COL. FRED. MAISEY, Judge Advocate General                                                       | 1  |
| II. Army Signalling and Telegraphy—The Cypher System, by CAPTAIN R. HENNEL, 25th Regt. N. L. I.                                                           | 13 |
| III. On Cavalry, by COLONEL R. T. SNOW, Bengal Cavalry                                                                                                    | 19 |
| IV. Remarks on organization of Native Infantry, by CAPTAIN H. C. P. RICE, 1st Sikh Infantry                                                               | 29 |
| V. Lecture on the Profession of Arms, delivered to the Soldiers of the Rawul Pindi Garrison, April 8th, 1872, by MAJOR ARTHUR CORY, B.S.C., Brigade Major | 33 |
| VI. Camp Lessons: The Native Officers of our Indian Army,                                                                                                 | 45 |

### SELECTIONS.

|                              |    |
|------------------------------|----|
| The Game of War              | 51 |
| The Study of Natural History | 61 |
| The Wellington Despatches    | 67 |

### REVIEW.

|                                             |    |
|---------------------------------------------|----|
| Proceedings of Sanitary Commission for 1871 | 75 |
|---------------------------------------------|----|

### GLEANINGS.

|                                   |    |
|-----------------------------------|----|
| Machinery for the Royal Engineers | 77 |
|-----------------------------------|----|

---

*\* \* For the facts and opinions advanced in the above papers, the authors alone are responsible.*



# ORIGINAL PAPERS.

---

## On the Dress of the Army of India.

By COMMON SENSE.

---

*Published with the permission of the Adjutant General.*

---

IN consequence of the authorities having invited Officers to write an essay on the dress of all branches of the Indian Army,—European and Native,—I presume they are anxious to have this important subject thoroughly ventilated by those whose practical experience renders them capable of forming a sound opinion on this knotty and much-vexed question, concerning which pseudo-reformers have at various times written so much sense and nonsense. Fearing that the remarks which I am about to make may be fated to be classified in the latter category, I address myself to the task with extreme diffidence, as I cannot help feeling that probably many better Soldiers than myself are at present similarly engaged ; so I shall commence by assuring those who kindly take the trouble of wading through the following pages, that my sole object in entering the arena in this discussion is in the hope that some of my ideas may prove worthy of consideration, and I shall be perfectly satisfied if even one of the many suggestions I am about to make is eventually adopted, as I shall then have the pleasure of feeling that I have, to this trifling extent, aided those who are endeavoring to promote the welfare of a noble service in which I have passed the best years of my life. As I believe every one will admit that the Infantry is the backbone of the Army, I shall commence by discussing the dress of the Foot Soldier and shall begin with his head-dress.

### HEAD-DRESS.

I strongly disapprove of the present wicker helmet issued to troops serving in India for many reasons, some of which I shall now proceed to enumerate. It is most unnecessarily large, and projects so far over the eyes and nose that it materially interferes with a man's shooting, and, I think, this alone is sufficient to condemn it, as a head-dress, in which a Soldier cannot take accurate aim, is of course most undesirable. It is a most inefficient head-dress in wet weather, and the cane work is an excellent hiding place for bugs, which swarm in most of the barracks in India. It is most uncomfortable to wear, and I do not consider it to be a very good protection against the sun. It is easily put out of shape, and is even, when new, extremely unsightly in appearance : I would suggest that a grey felt hat, of the stoutest description, of the shape of





that depicted roughly (*vide Fig. 1*), be substituted in lieu of the wicker helmet, as I conceive that it would be an immeasurably more comfortable and efficient head-dress, and would be equally suitable for all countries and seasons; for, with the addition of a wadded linen cover and large turbar (*Fig. 2*), I can assert, from personal experience, that it is rendered impervious to the vertical rays of the most powerful tropical sun, as I never wore any other kind when out in pursuit of large game during the exceptionally hot weather we experienced last May and June. The hat I propose should be tolerably high in the crown, and should be ventilated on Ellwood's principle (*Fig. 3*).

Should the authorities consider that the back of a man's head and his temples would not be sufficiently protected from the sun, when wearing a perfectly comfortable hat such as I have endeavoured to describe.

I would, in that case, recommend that a strong grey felt helmet be adopted in lieu of the wicker one, and of such dimensions as not to interfere with a man's eyesight, which the present pattern certainly does, as any one will be able to testify, who has seen troops wearing them when at ball practice. I think the shape of the cork helmets supplied by Hawkes and Co., is the best I have seen, as they are not nearly so clumsy as the wicker ones, and are soldier-like in appearance; but, in my opinion, no helmet is as comfortable as a hat shaped like the one I have recommended for adoption.

#### FORAGE CAPS.

As Forage caps should only be worn by troops serving in India either early in the morning or late in the afternoon, I think the Glengarry cap, which has, I believe, recently been decided on for the use of the Infantry, is as sensible a one as could be devised, as it is soldier-like in appearance, extremely comfortable, portable and not liable to get out of shape, whereas the Kilmarnock cap, at present in wear possess none of these qualifications.

#### TUNIC.

I disapprove entirely of the present tunic, as I consider it to be badly adapted for active service, either in Europe or India: it is far too tight and interferes seriously with the respiratory organs, as the throat and chest are far too confined.

Although I fully recognize the necessity of making the dress of the Soldier as showy and attractive as possible, especially in an army raised by voluntary enlistment, nevertheless as England maintains, a standing army for the purpose of upholding her honor in all parts of the world, and not for attracting the admiring gaze of her fair daughters when witnessing a mimic warfare at Aldershot, and such like places when; devising a suitable dress for the Army, perfect freedom to the limbs, comfort and serviceableness should be the first considerations; and if it is impossible to hit upon a really handsome uniform possessing these essential qualities which I am rather inclined to think will be the case, then the only business-like way what I can see of solving the difficulty is for the soldier to have two coats, one for show, and the other for work, and I think this might be managed without increasing the cost of clothing the Army to any great extent, as I shall endeavour subsequently to explain.

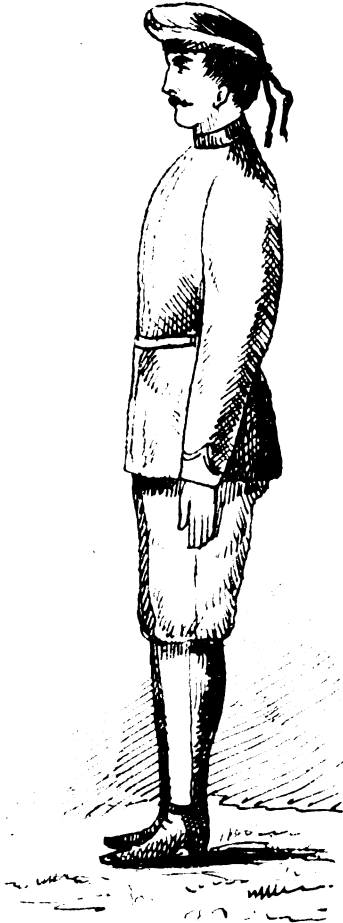
#### THE NORFOLK JACKET TO BE THE WORKING DRESS.

In my humble opinion, the proper working dress for the British Soldier would be a stout scarlet serge Norfolk jacket, with a small rolling collar; for I am a great advocate for having the neck left perfectly free from pressure, which is certainly not the case at present in any of the coats now in wear. For, although the ridiculous leather stock no longer exists in the Army as a remnant of barbarism, nevertheless, until the present stand-up collar, fastened by a hook and eye of huge

4



4



dimensions, is swept away, the necessary freedom will not be attained; besides being uncomfortable the stand-up collar is most uncleanly, as every one who has had much to do with Soldiers must have frequently observed how often the inside of the collar of a Soldier's tunic appears saturated with grease from perspiration, whereas a coat with a small rolling collar, such as I have endeavoured to sketch *vide Fig. 4*, would be free from all these objections; and as it would, of course, be most unsightly to see the neck band of a not over-clean shirt protruding above the rolling collar, I would prevent such an exhibition by causing Soldiers to supply themselves with two or three blue cotton moveable collars to fasten round the neck, as do the white ones most of us now wear when in plain clothes. The shape of a Norfolk jacket is so generally known, owing to its having now for some years held a high place in the



estimation of sportsmen as a dress admirably adapted for those whose pursuits demand great physical exertion, that I think it would be superfluous for me to give a minute description of it here; so suffice it to say that the Norfolk jacket should be the working dress of the army; and I would suggest that a stout scarlet serge Norfolk jacket be issued annually to troops serving in India, in lieu of the cloth tunic, which is an unsuitable dress at any time or season for Soldiers serving in any tropical climate.

#### SHELL JACKET.

Although it does not, perhaps, come within my province as an essayist on the most suitable dress for the Army in India to touch upon the shell jacket, as that ridiculous and thoroughly-unserviceable garment does not form part of the kit of the Infantry Soldier in this country, nevertheless, as I am most anxious to see its abolition as an article of dress for the British Soldier when serving in other countries than India, I cannot refrain from embracing this opportunity of condemning it; as, I think, it must have struck most observing individuals when they have met Soldiers buttoned up in tight shell jackets, when employed as working parties or in carrying coal or other fatigue duties, how singularly ill adapted such a dress is for the purpose. I calculate that a Soldier serving out of India could procure a scarlet serge Norfolk jacket, such as I propose should be issued to Soldiers serving in India in lieu of the cloth tunic, for, if anything, less money than he now pays for the shell jacket; therefore, if the cloth tunic, modified as I shall hereafter explain, was issued to him for show, he would not be put to greater expense than he is at present, should he be compelled to pay for the Norfolk jacket, as he would merely have to purchase it in lieu of the shell jacket.

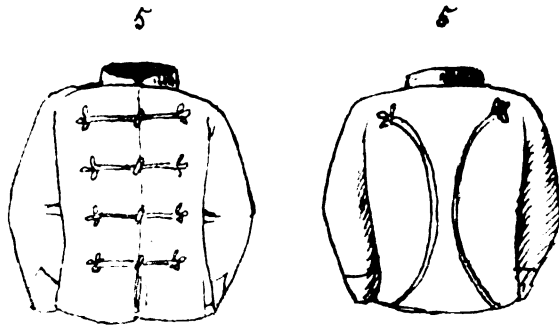
#### BLUE WOVEN JERSEY SHIRT.

I think that a blue woven woollen Jersey, such as is now worn by all Sailors, should form part of the kit of British Soldiers of all Arms. as it is admirably adapted as a working dress for Soldiers when performing any kind of fatigue duty, or recruit or sitting up drill in the barrack square, and would be equally well suited for men employed in throwing up field works; and it would prove a most economical dress, as a good woollen Jersey would last for years; and in cold weather the men could wear it underneath the Norfolk Jacket. And should the Government demur at the expense which the gratuitous supply of the extra article biennially would necessitate, I do not think it would be any great hardship to the Soldier should he be obliged to furnish himself with one at his own expense, as Soldiers are now so much better paid than they used to be.

#### FULL-DRESS TUNIC NOT TO BE TAKEN ON ACTIVE SERVICE.

If a Soldier possessed a Sailor's Jersey to wear when employed on fatigue duty or underneath the Norfolk jacket in cold weather, it would obviate the necessity of his taking a tunic on active service; for as I have before stated, I consider that the tunic should merely be worn when on Home service, or when a Regiment was employed on ordinary garrison

duty in some non-tropical climate. As I may not have occasion to allude to the tunic again in the course of a treatise on the Dress of the Army, I might as well state that I consider this tunic, cut somewhat the same as the blue patrol jacket now worn by the Officers, would be far preferable to the present tight-waisted one ; and, in order to give it a showy appearance, I would have it braided with yellow cord up the back and across the chest and fastened with hooks and eyes, and frogs and olivets, instead of the present enormous sized brass buttons (*vide Fig. 5*).



WHITE CLOTHING.

I strongly disapprove of the coarse American drill white clothing ; for, although cool in appearance, it is, in my opinion, by no means so in reality ; for, being of close texture, it only requires the addition of the congee water, usually so liberally bestowed on it by the *dhobies* (in lieu of starch), to render it almost impervious to air, to say nothing of the disadvantage of so many suits being required to enable a Soldier to turn out on all parades, and other occasions, in a cleanly state. I would substitute in lieu of the four suits of white clothing, which Soldiers serving in India have now to keep up at their own expense, two suits of thin serge, as, having worn clothes of that description myself, I can speak in the highest terms of its durability, and it is undoubtedly far cooler than white drill for being of such open texture the air circulates freely through it, and when I have become heated I have never experienced the chills I have felt sometimes when wearing white clothing. As dark blue or scarlet is considered to attract the rays of the sun more than a lighter colour, I would suggest light French gray as a suitable colour, if a fast dye of that colour is procurable ; in fact, somewhat the same shade as that worn by the old Bombay Light Cavalry. The cut of the coats of this light serge should be the same as that of the scarlet serge, which I have proposed as the working dress, *viz.*, a Norfolk jacket ; and if the authorities considered that it required some embellishment, I would suggest a little red piping round the wrist-bands and small rolling collar, which would have a pleasing contrast with bluish gray. The Soldier serving in India would have to keep up two Norfolk jackets, and two pairs of trowsers of

this light serge, in lieu of the white clothing; and as I propose that Soldiers serving in India should receive annually a scarlet serge Norfolk jacket, and no tunic, the difference in the Soldier's favour between the cost of the latter and that of the former garment should be applied towards paying for the two serge suits which I calculate a Soldier would require annually, the balance requisite to cover the total cost of these two light serge suits to be stopped from his pay.

#### WAISTBELTS NOT TO BE WORN OFF DUTY.

As a Norfolk jacket always sits close to the waist owing to the band round it, I think the rule at present in force of compelling Soldiers to wear the uncomfortable hard buff leather waistbelt might be rescinded with advantage when Soldiers are off parade or duty, as it would not only conduce immensely to their comfort, but would deprive them of an offensive weapon, with which serious injuries have often been inflicted by men engaged in drunken brawls.

#### SUMMARY OF THE ALTERATIONS PROPOSED IN THE COATS OF THE INFANTRY SOLDIER.

As I have written so long a paragraph on the coat question, perhaps it would be as well for me to here summarize the alterations I propose, viz., the tunic to be cut like an Officer's patrol jacket (which, I am sure most of my brother Officers will agree with me in saying, is the most comfortable dress that has ever been devised for us, and it only requires a rolling collar, such as that worn by Engineer Officers, to render it perfect). The abolition of the shell jacket for Soldiers serving at Home, and the substitution of a stout scarlet serge Norfolk jacket, which should be served out annually to Soldiers serving in India, instead of the tunic, which should not be worn by Soldiers serving in a tropical climate.

A Sailor's woollen woven Jersey to form part of the kit of all Soldiers.

Two suits of light textured gray serge to be kept by Soldiers serving in India in lieu of white clothing.

#### BLACK CLOTH TROUSERS.

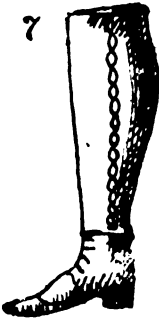
I consider the black cloth trousers to be the worst article at present issued to the British Soldier: they are far too coarse in quality; the consequence is, that if a man wears them on a long march along a wet and muddy road, as soon as they get wet and dirty about the legs they are sure to drag, and will, in all probability, gall him about the thighs; in fact, I think that the black cloth trousers at present issued are totally unfit for the Infantry Soldier, whom I would supply with a modified knickerbocker made of the blue serge; that is to say, I would have the thighs made on the knickerbocker principle, only not quite so baggy as those usually worn by sportsmen; and from where the band below the





LEATHER LEGGINGS.

I am sure that any man who has taken a walking tour, carrying his own knapsack, will bear me out in saying that a well-fitting legging is an immense support to the leg; and I think, the leather one worn by the Zouaves and Voltigeurs of the French Army is as good a one as could be



devised (*Fig. 7*); therefore I think, leather leggings of that description should be served out to our Infantry, and that they should be invariably worn over the pantaloons on the line of march, and on all occasions during wet or cold weather. I opine that any one who recollects what slovenly dirty fellows English Soldiers looked in the Crimea when returning from the trenches with their wide-legged trowsers begrimed with mud and filth up to their knees, cannot fail to endorse the opinions I have expressed as to the proper style of leg clothing for Foot Soldiers. The legging should be sufficiently long to cover the top of the boot, which all-important part of the Soldier's equipment I shall now proceed to discuss. When I first joined the service, now more than 22 years ago, I think there is very little doubt but that the British Army was the worst booted in Europe; as little or no regard was paid to the proper fitting of the man's boots, and as they only received one pair of badly-shaped ill-made, ammunition boots in the year, they were compelled to provide themselves with at least one other pair; and as in those days little or no attention

was paid to these matters, the men frequently had in their possession high-heeled, narrow-toed boots in which no man could march; the consequence was that whenever the men had a long march, numbers fell out foot-sore; and having read of the extraordinary marches occasionally performed by British Soldiers in the Peninsula, I was somewhat astonished, when as a lad of 17½ I took my first march with a company of a distinguished Corps (in fact *nullis secundus*) to find that before we had proceeded ten miles several of the men were sitting down by the side of the road utterly incapacitated to continue the march, owing to their ridiculous high-heeled dandified boots having blistered their feet.

#### BOOTS.

Although within the last few years the shape and quality of the ammunition boots have vastly improved, nevertheless I do not consider the present boot to be anything like as serviceable a one as might be adopted; for, in the matter of boots, appearances should be banished from all consideration, as an Infantry Soldier who cannot march is useless; and to enable him to do so, it is essential that he should wear the style of boots which game-keepers and sportsmen have pronounced to be the best after long experience, so I should recommend that a leaf be taken out of their book *in re* of boots.

Being myself an enthusiastic sportsman, and a tolerably good pedestrian, I have no hesitation in condemning the ammunition boot, radiant from the joint effects of Day and Martin's blacking and elbow grease, and think it should give place to a broad and tunnelled-soled boot. I mean by the expression that the sole should project considerably beyond the uppers, the toes should be broad and capped, the heels should be low, broad, and long, the uppers should lace tolerably high up so as to ensure the legging well lapping over them, thus preventing gravel or sand getting down the boot, which is a frequent cause of men becoming footsore (*vide* Fig. 8). I should not be in favor of too heavy a boot,



therefore I should not stud the sole too thickly with nails: but I would recommend screws, slightly projecting above the surface of the sole, being placed as shown in (Fig. 8). as they would sufficiently protect the sole and would prevent the men from slipping when marching along a greasy muddy road, the lower portion of the boot to be fastened with brass bound eyelet holes, sufficiently large to admit of the strongest fishing line boot laces, which is a material at least double as thick as the stoutest whip cord, and I have found it far more durable than leather, as the latter, unless of the best porpoise hide, which is very hard to

procure, are very apt to break. The upper portion of the boot might be fastened by hooks, as a boot secured in this manner is much more quickly laced than when the lace for the whole length has to be passed through eyelet holes. Blacking and a polishing brush should not form part of the kit of the Foot Soldier, as his boots should be invariably kept well greased as a man cannot march in hard boots. Before concluding the subject of boots, I would wish most strongly to urge the absolute necessity of more attention being insisted on, on the part of Regimental Quarter Masters, Officers Commanding Companies, and their Pay Sergeants, respecting the proper fitting of the men's boots. Every man's foot in the Regiment should be carefully measured annually by one of the Regimental Boot-makers, and the size carefully noted in a roll book, so that the most accurate information could be supplied to the Quarter Master when making out his requisition for boots; as I think as much care as there ought to be is not bestowed on this most important matter at present, consequently it is by no means rare to see a Soldier wearing badly-fitting boots. Any men with peculiar shaped feet, whom it would be impossible to fit from the stock of different size boots supplied by the Clothing Department, should have their boots made in the Regimental Workshop, which establishment should be supplied by Government with every description of last.

The long boots issued in the Crimea were absurdities for Foot Soldiers, as the men were utterly unable either to march or work in them. A good lace boot is the only description worthy of a moment's consideration for a Foot Soldier.

#### GREAT COAT.

I shall now discuss the great coat. I consider the one issued from the Clothing Department to be very inferior in quality to the light blue cloth great coats supplied by the Bombay Government. I have only seen one of the new pattern English great coats, and I certainly did not approve of it, as the cape was sewn down, which is most objectionable for India; as, being a bug-infested country, coats of this cut would speedily be well-tenanted by those troublesome insects, as it would be impossible to clean a coat of this description. I think a cloth cape is a mistake for a Soldier's great coat. I would merely have a rolling collar, which could be turned up in very bad weather, and I would have buttoned on to the coat a cloth hood similar to that worn in the French Army, as I often noticed in the Crimea that French sentries looked far more comfortable in bad weather with their hoods than our men did with a useless cape blowing about. In lieu of the cloth cape I would supply each Soldier with an oblong shaped piece of tarpaulin or oiled light canvas, such as Soldiers' great coats are made of; along the sides of which I would place eyelet holes, and, I think, it could then, by a little arrangement, be applied to the following purposes, *viz.*, 1st, as a cape to be worn in wet weather; 2nd, as a waterproof sheet for the Soldier to lie on at night; 3rd, two or three fastened together might form a *tente d'abri*, such as the French use; 4th, on the line of march his blanket and great coat might be rolled up in it, in such a manner as,

with the addition of slings on the yoke principle, to form a knapsack ; as the following articles of kit could be placed in a small brown Holland bag which would be packed in the waterproof together with the blanket and coat, thus keeping the whole of the Soldier's kit perfectly dry, *viz.*, one flannel shirt, one pair of woollen socks, one pair of pantaloons, one pair of boots, and one Sailor's Jersey shirt, one towel, and a knife, fork and spoon ; and these articles, with the addition of the mess tin, which should be strapped to the slings, is the kit which I consider he should carry on his back on service, as he should never be dependent on the agency of transport for a complete change of clothes ; for although I have observed that some Military writers suggest that the Foot Soldier should not be hampered with anything to carry except his rifle and ammunition, I cannot endorse such an utterly fallacious theory ; and have always concluded that these impracticable suggestions must have emanated from men who had had no practical experience of actual warfare, and were consequently advancing absurd theories on a subject which they were thoroughly incompetent to discuss. As all real Soldiers know the difficulty of procuring a sufficient amount of transport for the conveyance of the spare ammunition, food and sick of an Army, therefore they would not be at all likely to advocate that the British Infantry Soldier should henceforward have the kit conveyed for him, which he and every other Foot Soldier in Europe has, up to the present time, carried on his back. I do not think it at all follows as a natural sequence that because the British Soldier, when buttoned up in a tight-fitting tunic, has proved himself unable to carry a most unnecessarily large kit packed in the worst possible description of knapsack, that, when dressed in the workman-like costume I propose, he should be unequal to carry the articles I have named ; all of which, I think, must be pronounced essentially necessary to his health and comfort on a campaign.

#### UNDER CLOTHING.

As too much attention cannot possibly be bestowed on anything calculated to promote cleanliness in the British Soldier, as the preservation of his health, I feel convinced, depends nearly as much on it as on his being properly clothed and fed, I am strongly in favour of a couple of pairs of cotton web drawers forming part of the kit of British Soldiers of all Arms, as, I think, the present system of allowing them to wear trowsers (of material incapable of being frequently washed) without drawers is a mistake, and one likely to prove prejudicial to the health of the men, as very little consideration must suffice to convince the most sceptical on this point that with men of dirty habits their trowsers must frequently be in an extremely filthy state. When Soldiers are starting on a campaign in a cold climate, they should be supplied with drawers of a woollen web.

#### SHIRTS AND SOCKS.

The Soldier on a campaign or when on the line of march should be compelled to wear a flannel shirt and wollen socks ; therefore, two of the



former and two pair of the latter should invariably form a portion of his kit, so that he should at all times be prepared for either of these eventualities ; but when in quarters I should recommend his being allowed to wear cotton shirts and socks, if he preferred so doing. I think I have now pretty well exhausted my ideas regarding the dress of the Infantry Soldier, so I shall proceed to discuss that of the Dragoon.

#### BRITISH CAVALRY.

Most of my remarks regarding head-dress, coats, and under-clothing for Infantry, are equally applicable to Cavalry Soldiers, as I would likewise advocate their having a handsome tunic for show, and a good sensible working dress for service ; and for the latter purpose I should say that there could be no better one than a short-skirted stout serge Norfolk jacket ; for, although I do not pretend to be a sabreur, I think it stands to reason that a Dragoon could wield a sword with more effect when clothed in a perfectly loose dress than when buttoned up in a tight tunic. And it strikes me forcibly that if a plated or bronzed steel curb-chain was placed instead of shoulder straps on the Norfolk jacket, that many a man would in action be protected from what otherwise might prove a fatal cut. But being a Foot Soldier I advance this opinion with all humility. I cannot think that the present leather-bound over-all can be as comfortable as a tolerably tight-fitting pantaloons, such as many of us wear in the hunting field ; and I consider that a Hessian boot with a heel like an ordinary top boot, (*viz.*, long and low) and hunting spurs, would be more business-like than the high-heeled Wellington boot with screw or box spur. The Cavalry man would, of course, require a light pair of ankle boots or shoes for wearing when at stables, or employed on fatigue duties. But I cannot help thinking that the Hessian boot, or at any rate a boot somewhat of that description, is the most comfortable for the mounted man.

#### ARTILLERY.

My remarks regarding the advantages likely to accrue from a loose dress being supplied to the Cavalry and Infantry soldier, applies with still greater force to the Artillery man, as the duties which he is frequently called upon to perform demand a greater amount of physical exertion ; therefore it is a matter of the first importance that his muscular action should not be impeded by his limbs being encased in tight clothes, and as the modifications necessary to render the costume I have proposed for the Infantry Soldier applicable for the British Gunner is not likely to be well treated by me, I conceive that the subject had better be ventilated by an Officer belonging to that Arm of the Service.

#### DRESS OF NATIVE TROOPS—CAVALRY.

I think that the loose Norfolk jacket and the pantaloons and Hessian boots and hunting spurs I have proposed for English Cavalry would prove an equally suitable dress for the Native Cavalry ; but there is no doubt that many of the Irregular Regiments wear a very workmanlike costume, and if any alterations are desirable, any of those gal-

lant men (who are at present commanding some of the Irregular Corps), many of whom have gained a European reputation for their prowess as horsemen and swordsmen, are much better capable of discussing the requisite changes than I am, so I shall avoid a topic which I probably do not thoroughly understand.

#### NATIVE INFANTRY.

There cannot be two opinions regarding its being an absurdity to dress men who, previous to their entering our service, have been accustomed to wear the loose flowing robes of Asiatics, in tight tunics and trowsers, and, I think, the sooner a more appropriate costume is adopted the better. However, as this is a question which one of our able Native Infantry Officers ought to be far better able to solve than myself, I shall merely confine myself to making a few general remarks; and if they are considered worthy of investigation, the details can be worked out by an Officer of that service.

#### ZOUAVE COSTUME.

I think the dress worn by the French Zouaves would be a very sensible dress for our Sepoys, as the Fez would certainly suit them far better than the hideous ill-shapen forage cap they now usually wear, and, with the addition of a turban, would form an excellent head-dress; and the loose-fitting jacket and waistcoat, and the knicker-bockers and leggings, would also be most suitable. However, should the Government consider that the adoption of the Zouave costume would be too expensive, then I would suggest that the Native Infantry should be clothed in the loose red serge Norfolk jacket and pantaloons-shaped knicker-bockers, which I have already recommended as the working dress for the British Infantry. And as it is equally necessary that the greatest attention should be paid to the fitting of the boots, the remarks I have already made on them will be equally applicable to Sepoy Troops.

#### CONCLUDING OBSERVATIONS.

In conclusion, I shall now make a few general remarks, although, perhaps, some of them may not be considered to come strictly within my province, as an essayist, on the most suitable costume for the Soldiers of all Arms and Nationalities serving in India.

#### OFFICERS' DRESS.

In these days of accurate shooting rifles, it is, every one will admit, a matter of the greatest importance that the dress of the Officers should be assimilated as much as possible to that of the men, when on service; therefore, I think, the sooner the useless crimson sash is abolished the better, as it renders an Officer most conspicuous in the ranks; and no one who has not worn it can conceive how much it adds to one's discomfort in India, as it is extremely warm, to say nothing of its being by no means a cheap appendage. The Company Officers should be dressed when in action or on field days, &c., in scarlet serge Norfolk jackets, knicker-bockers, leggings, and boots, the same as the men in cut. And as, the rolling collar, the present system of distinguishing the dif-

ferent grades by crowns and stars could not well be continued, which is so much the better as it is a most inefficient one, I should suggest that the French system of distinguishing the grades by rows of gold tracing braid on the arm be adopted, without any modification whatsoever as nothing better could be devised, as the rank of an Officer is recognised in an instant, whereas the last effort in tailoring in the British Army regarding the sleeve of the tunic, has not been equally successful.

#### MOUNTED INFANTRY OFFICERS.

As the knicker-bocker and leggings would not be suitable for mounted Officers, I think a pantaloon and Hessian boot should be adopted for them, the same as I have proposed for the Cavalry.

#### OFFICERS' FULL-DRESS UNIFORM.

I should advocate the Officers having a handsome full-dress tunic, the same as what I have proposed for the men in cut, and with gold cord, which would prove a far neater uniform than the present tunic, with that most useless gold and crimson sash. On ordinary parades, and when on Orderly or Court Martial duty, or when stationed in a garrison town, where it was compulsory for Officers to appear in uniform, I would suggest that permission might be accorded to them to wear the blue patrol jacket and trowsers, similar to those we have at present.

#### STEEL SCABBARDS.

I have perceived that some writers abuse the present steel sword scabbards, but, in my opinion, it is a decided improvement, being far more soldier-like in appearance and efficient for service ; as what an Infantry Officer requires is a sharp point to his sword, as no man on foot, I think most swordsmen will admit, should think of cutting. I think those who are loud in praise of the useless old leather scabbards cannot have been in the Crimea, otherwise they could not have failed to observe that a vast number, if not the majority, of Infantry Officers had lost the brass tips of their scabbards, and many of them had swords minus scabbards, the leather ones having become perfectly rotten from constant exposure to wet. If the authorities consider that the glittering steel scabbard makes Officers conspicuous in the ranks, that is very easily modified by having them browned like the barrel of a rifle before going on active service, and, I trust, they will never think of reverting to the useless old leather scabbards. I think a steel hilt, such as is worn by the Guards, should be substituted for the brass hilt on the Infantry sword, as the latter is a most inefficient protection for the hand, as a Native armed with a sharp *tulwar* would cut through it with the greatest ease.

#### SHELL JACKET.

I should advocate that the shell jacket be preserved as a mess dress for Officers, as it is a comfortable and at the same time economical one.

PIPE CLAY AND SOLDIERS' BELTS.

Pipe clay is most objectionable for many reasons, and its use should be discontinued, as, in my opinion, the coarse buff leather belts should give place to bridle leather ones, which would be quite as strong, far more comfortable, and less liable to stretch.

AMMUNITION.

With regard to ammunition I am inclined to think that the proper way of carrying it would be in two rows, round the waist, in a belt somewhat of the description used by sportmen for their breech-loaders: this belt should supported by straps over the shoulders, like braces to prevent undue pressure on the waist and loins.

Having now had my say, I shall give myself a *nom de plume*, which, I trust, the readers of this essay may consider me entitled to, viz.

COMMON SENSE.







## Rough notes on formation, equipment, and despatch of a force from India for service in China, Egypt, or elsewhere beyond sea.

BY LIEUT.-COL. F. S. ROBERTS, V. C., R. A.

---

FROM the experience gained in 1860, and again in 1867, when Troops were sent to the North of China and Abyssinia respectively, we can proceed with some confidence to discuss the necessary details connected with the formation, equipment, and despatch of a Force from this country for service beyond sea. We are now well acquainted with the climate and resources of almost every place where the presence of British Troops is likely to be necessary, and, to a certain extent, with the obstacles to be overcome; there ought to be, therefore, no great difficulty in carrying out the necessary arrangements.

The points which appear chiefly to require consideration are—

- Strength of the Force.
- Season and date of despatch.
- Transport by sea.
- Transport by land.
- Equipment.
- Commissariat arrangements.
- Medical arrangements.
- General remarks.

### STRENGTH OF THE FORCE.

The strength of the Force depends so entirely on the object in view, nature of the country, obstacles to be overcome, &c., &c., that to attempt to lay down what number of Troops of the several arms should be sent here or there, without knowing what those Troops would be called upon to perform, would be a mere waste of time; but we can with advantage consider the requirements of an army of a certain fixed strength, any portion of which can be increased or decreased as circumstances may demand.

In some countries, such as the Northern part of China, or Egypt, a large proportion of Horse Artillery and Cavalry might be considered necessary. In other parts of China, such as the neighbourhood of Canton, or in a country like Abyssinia, a predominance of Infantry is essential. If, therefore, we take for our discussion a Corps d'Armée of 24,000 men, there will be no difficulty in altering the composition of such a Force to meet the requirements of the occasion.

A Corps d'Armée of 24,000 men, despatched from India, would probably be constituted somewhat as follows:

|                                         | Officers. | Men.                     | Horses. | Bullocks. | TOTAL.    |                           |         |           |
|-----------------------------------------|-----------|--------------------------|---------|-----------|-----------|---------------------------|---------|-----------|
|                                         |           |                          |         |           | Officers. | Men.                      | Horses. | Bullocks. |
| 2 Batteries of Horse Artillery, each .. | 6         | 145                      | 113     | 74        | 12        | 290                       |         | 3 6149    |
| 6 " of Field " " ..                     | 6         | 145                      | 121     | 71        | 36        | 870                       |         | 7 6144    |
| 2 " of Garrison " " ..                  | 6         | 76                       | 10      | 290       | 12        | 152                       |         | 20 580    |
| 2 Regiments, British Cavalry " ..       | 28        | 500                      | 567     | 0         | 56        | 1,000                     | 1,134   | 0         |
| 6 " Infantry " " ..                     | 33        | 1,000                    | 6       | 0         | 198       | 6,000                     | 36      | 0         |
| 6 " Native Cavalry " " ..               | *8        | 500                      | 531     | 0         | 48        | 3,000                     | 3,186   | 0         |
| 12 " Infantry " " ..                    | *8        | 1,000                    | 8       | 0         | 69        | 12,000                    | 96      | 0         |
| 6 Companies of Sappers & Miners ..      | 5         | 8 British<br>120 Natives | 3       | 0         | 18        | 48 British<br>720 Natives | 18      | 0         |

|                                | Officers.     | Men.        | Horses.       | Bullocks.                 |
|--------------------------------|---------------|-------------|---------------|---------------------------|
| Giving a total of Artillery .. | 60            | 1,308       | 1,132         | 1,172                     |
| British Cavalry ..             | 56            | 1,000       | 1,134         | 0                         |
| " Infantry ..                  | 198           | 6,000       | 36            | 0                         |
| Sappers and Miners ..          | 18            | 48          | 18            | 0                         |
| Total British Force ..         | 332           | 8,356       | 2,320         | 1,172                     |
| Native Cavalry ..              | 48            | 3,000       | 3,186         | 0                         |
| " Infantry ..                  | 96            | 12,000      | 96            | 0                         |
| Sappers and Miners ..          | 0             | 720         | 0             | 0                         |
| Total Native Force ..          | 144           | 15,720      | 3,282         | 0                         |
| Grand Total ..                 | 476 Officers. | 24,076 Men. | 5,602 Horses. | 1,172 Bullocks, with      |
|                                |               |             |               | 12 Horse Artillery guns.  |
|                                |               |             |               | 36 Field Battery guns and |
|                                |               |             |               | 12 Guns of position.      |

To these numbers must be added followers and baggage animals, for whom transport by sea will be required, and who will amount at the very lowest calculation to—

- \* 14,500 followers,
- 8,250 baggage animals,

*irrespective* of the men and animals for the working of the Ordnance, Engineer, and Commissariat Departments.

The present complement of Officers with Native Regiments is given; but for service in a foreign country, it is essential that several additional combatant and one additional Medical Officer should be posted to each Corps.

It may be urged in defence of the present system that Native Regiments went through the campaign in Abyssinia without any increase to the number of Officers (one extra only being allowed to each Cavalry Regiment to perform the duties of Quarter Master), but the Abyssinian campaign was quite exceptional, not a single Officer was killed in action. Had a severe battle been fought before Magdala, followed, as in all probability it would have been, by engagements in other parts of the country, there can be no doubt but that some of the Native Corps would have been quite *hors de Combat*. No officers could have been drawn from the transport train without injuring the efficiency of that vital portion of the Force, nor could any have been spared from the Re-

\* The majority of these are syces, bullock drivers, muleteers, and doolie bearers, none of whom could be materially reduced without impairing the efficiency of the Force.

giments, British or Native, in the rear. Every available Officer had previously been withdrawn for the many appointments on the staff, which invariably occur in every campaign, and it is on record that the Commandant of a Native Corps, which advanced but a very few miles from Zoola, objected to one of his Officers being nominated to the staff, in consequence of his finding that, in less than two months after landing, two of his Officers had been invalided from the effects of the climate, and that the withdrawal of another would seriously impair the efficiency of his Regiment.

If we refer to the numerous casualties which occurred in some of the Native Corps most engaged during the mutiny, we shall find that, in the Guide Corps and 1st Punjab Infantry, no less than five Officers were killed and 12 wounded during the siege of Delhi,—the two Regiments having joined the force with a complement of four Officers each. Again, in the 4th Punjab Infantry, at the attack on the Secundrabagh, every Officer was killed or wounded with the exception of a young Ensign who had only been attached to the Regiment a day or two previously. One of the most distinguished Native Officers, while recounting, with an honest pride, the gallant manner in which the Corps had conducted itself in the morning's fight, asked the writer where Officers were to be found to take the place of those who had been killed and wounded that morning, adding "you have seen how well we can fight when properly led: but without Officers to command and *bund-o-bast-kar* for us, we are helpless." Fortunately in those days Officers were plentiful, and able men were soon found to replace those who had fallen in the service of their country. The remembrance of these memorable occasions was fresh in the minds of our rulers when the Force was organized for China in 1859 and 1860, and in consequence eight additional Officers were posted to each Native Regiment ordered for service in that country; there again, the casualties were exceptionally few; but it is believed, for the arduous duties of outposts, escorts, &c., it was not found that one Officer too many had been sent.

Or, if we refer to even more recent times, we shall find that at Umbeyla, where the hardest fighting took place since the mutiny, Native Corps suffered so severely in Officers, that volunteers had to be called for from British Regiments, and Officers had to be hurriedly sent to join the Force from all the neighbouring stations. Fortunately here, again, good and true men were forthcoming, and for service in India no doubt any number of Officers can be obtained by having recourse to those serving on the staff, or in Civil employ, or taking them from Regiments at some distance from the seat of war; but out of India we cannot hope for such an unlimited reserve, and it is not too much to say that, if our Native Regiments are sent on service beyond sea, or at any distance from our frontier with the present complement of Officers, they would be hopelessly crippled after the very first serious engagement, and the Commander, who imagined he had an efficient force at his disposal, would suddenly find himself quite unable to carry out the work he had been selected for, until he was reinforced by Officers from India.



The Force would in all probability be drawn from Bengal, Madras and Bombay ; for, in addition to the advisability of employing Troops of all three Presidencies, the embarkations could be proceeded with more speedily and satisfactorily than if the whole Army were despatched from one port,—for the Bengal Troops, the ports of Calcutta and Kurrachee are available,—for the Madras Troops, Madras and Beypoor,—and for the Bombay Troops, Bombay and Kurrachee.

#### SEASON AND DATE OF DEPARTURE.

If the Force be destined for service in Egypt, Abyssinia, Arabia or Persia, it is believed that it might be despatched at any season of the year ; but if the scene of operations is anywhere to the North of China, the time of departure is limited to the six weeks between the 20th March and 1st May, unless, indeed, it were possible to accommodate all the Troops in steamers. From November to March the Peiho is frozen over, and the cold is so intense that, unless absolutely necessary, no operations should be carried on during that period ; then from March till the end of May, the N. E. Monsoon blows with such violence, no sailing vessel, even under tow of a steamer, could proceed Northwards from Hong-Kong.

The 1st July may, therefore, be considered the earliest date on which a Force could land in the neighbourhood of the Peiho.

From Calcutta to the Peiho takes a vessel under tow 65 days, and, if we add 30 days more for the unavoidable delays which must occur whenever some 200 transports have to be collected at a certain rendezvous, we come to the end of March as about the date on which the Troops should commence leaving Calcutta and Bombay ; those embarking at Kurrachee should start not later than 20th March, while the Madras portion of the force might defer their departure till April.

At the end of March, in Calcutta, there is every chance of Troops being attacked with cholera either in Calcutta itself, or on the passage down the Hooghly. Every precaution must, therefore, be taken to guard against sickness, and, as explained hereafter, the several Corps should be brought down only just in time to embark, and, as soon as the embarkation has been completed, each vessel should be towed straight out to sea.

#### TRANSPORT BY SEA.

Whether each Corps and Battery embarks fully equipped with land transport, or whether transport for the Force is conveyed separately, the tonnage will not be materially affected, and at an approximate calculation the following amount would be required :

|                                   |     |     | <b>Ships</b> | <b>Tons.</b>   |
|-----------------------------------|-----|-----|--------------|----------------|
| 2 Batteries Horse Artillery       | ... | ... | 6            | 6,600          |
| 6 " Field "                       | ... | ... | 15           | 16,500         |
| 2 " Garrison with siege guns      | ... | ... | 4            | 4,400          |
| 2 Regiments British Cavalry       | ... | ... | 14           | 15,400         |
| 6 " " Infantry                    | ... | ... | 30           | 33,000         |
| 6 " Native Cavalry                | ... | ... | 36           | 39,600         |
| 12 " " Infantry                   | ... | ... | 48           | 52,800         |
| 6 Companies of Sappers and Miners | ... | ... | 2            | 2,200          |
| <b>TOTAL</b>                      |     |     | <b>155</b>   | <b>170,500</b> |

Each ship should be complete in every detail, tents, ammunition, baggage, animals, &c., being divided in due proportion, so that each Detachment may be independent and ready to land at any one point, without reference to the remainder of the Regiment or Battery.

An Officer and a few men from each Corps and Battery should proceed to the port of embarkation to superintend all the arrangements connected with the vessels taken up for their regiments, whilst the regiments themselves should be halted at some convenient distance on the line of railway, and there supplied with service clothing, kits weighed &c. So that when brought down they should be ready to embark at once; sickness and disease are always more or less rife in the Presidency Towns, and nothing is gained by having the men in them longer than necessary.

British troops at sea will, of course, be victualled according to the Admiralty scale, and for Native Troops, followers, horses, mules, &c., &c., the scales laid down in paragraphs 121-126—"Transport of Troops by sea," should be adopted.

A suction hose and force pump should be provided in each transport for the sole use of the troops, and they should be tested before the embarkation takes place.

Two chaff cutters with spare shears should be supplied to each horse and mule transport; they should be well tested beforehand, as they are apt to get out of order, and are difficult to repair at sea.

Veterinary medicines, with instructions for their use, should be put on board on each horse transport; and when no Veterinary Surgeon accompanies, it will be found convenient to have the medicines made up before embarkation and labelled ready for use.

The following articles are essential :

|                            |                        |                                   |
|----------------------------|------------------------|-----------------------------------|
| * Sulphur ... 1lb.         | } Mixed well together. | Mange ointment*                   |
| Turpentine ... 4oz         |                        | Soap.                             |
| Mercurial ointment ... 2 " |                        | Cloth for bandages.               |
| Linseed oil ... 1 pt.      |                        | Balling iron.                     |
|                            |                        | Drenching iron, and clyster pipe. |

The patent clyster pipe should be supplied, as the common one is not so easy to use in a crowded ship, nor is it so effectual.

Horses are very liable to gripes at sea. As a preventative, 20 or 30 corns of black pepper should be given daily in each feed ; nothing answers so well if gripes come on,—

$\frac{3}{4}$  seer ghee, or  $\frac{1}{2}$  seer castor oil, mixed with 1 ounce sulphuric ether, is a capital remedy.

It is strongly recommended that, as is done in Bombay, all transports engaged at Calcutta and elsewhere should be fitted up by Government. The present system of paying a higher rate per ton, and of permitting the owners to fit up their own vessels, is most unsatisfactory, and, it is believed, more expensive. Owners and agents think of nothing else but making as much money as they can. It is a matter of indifference to them whether animals are lost or injured during the voyage, and the most careful supervision will not prevent their putting up the stalls, &c., as cheaply and as badly as possible.

The very workmen, chiefly Chinese, they employ, will readily take service under Government, and by having the several transports moored together in the vicinity of the dockyard, the work of supervision would not be difficult.

In whichever direction the force is to proceed, it is essential that as much steam power as possible should be secured ; for, although steamers are not as convenient for the transport of animals as sailing vessels, they answer admirably for Troops and Followers, and a large number are necessary for towing sailing ships and ensuring the animals on board these latter, not being longer on the voyage than can be avoided. In the China Seas, at certain seasons, and in the Red Sea, nearly all the year round a sailing vessel might beat about for weeks without making any progress, during which time the lives of valuable animals would be risked, and large supplies of food and forage would be needlessly expended. Each transport should be numbered on both bows and quarters, the figures to be 3 feet long, and to be painted in black on a white square, the four white spaces being each 8 feet long by  $4\frac{1}{2}$  feet in depth.

As the actual amount of tonnage required can be approximately determined beforehand, certain numbers should be told off for the several transports at the different ports, in order that the vessel's number may be painted as soon as the tender has been accepted; for instance, all ships engaged at Calcutta might be numbered from 1 to 75

|                       |     |     |            |
|-----------------------|-----|-----|------------|
| Those at Madras       | ... | ... | 76 to 100  |
| Those at Beypoor      | ... | ... | 101 to 120 |
| Those at Bombay       | ... | ... | 121 to 170 |
| Those at Kurrachee... | ... | ... | 171 to 200 |

and so on, according to the requirements of the Troops at each place ;

if this is not done, then a letter in addition should be painted above each number, such as—

- C. on all Calcutta ships,
- M. on all Madras and Beypoor ships,
- B. on all Bombay ships, and
- K. on all Kurrachee ships.

The first-mentioned arrangement, however, will be found the most convenient.

In addition to these distinguishing numbers, cavalry ships should carry some small flag at their foremast, infantry the same at their mainmast, and artillery at the mizen-mast head.

Lists of the several transports thus numbered, shewing what Troops &c., have been allotted to each vessel, should be made out, and a copy given to the senior Officer on board every ship. This materially assists in determining the whereabouts of the Troops, for the number of each vessel met with can be reported, and moreover, as the general rendezvous is approached, the several Commanders will quickly detect what portions of the Force are on board each transport.

#### TRANSPORT BY LAND.

The care of all animals required for Army or general purposes may safely be entrusted to the Commissariat Department, increased in Officers and Non-Commissioned Officers to such an extent as will secure the necessary supervision. The Commissariat Department is used to the charge of transport of every description, and a train sufficient to meet the demands of an Army would have a better chance of being properly organized and worked under its superintendence, than if a land transport Corps were specially started for a particular campaign.

For individual Corps and Batteries, however, the Regimental system of transport is undoubtedly the best. The animals will be better cared for, and the drivers better looked after, than it is possible for them to be in a large train scattered all over the country. Animals and drivers in a very few days will become thoroughly fused into the system of the Corps to which they may be attached; moreover, when it is known that enlistment is made for a particular Regiment, men will come forward far more readily for foreign service; indeed, in many instances, the Native Officers and Soldiers will induce their friends and relatives to join, feeling that the drivers will be identified with themselves in every way, and will, under the care and supervision of their Officers, enjoy the same advantages as soldiers; they will be paid regularly, their remittances will be looked after, and, if ill, they will have the best medical attendance.

As soon as animals are made over to a Regiment, drills and parades for loading and marching should be practised, so that, on the Corps



taking the field, the men may be used to the work and perfectly efficient in handling their carriage and manœuvring with it.

One driver should be allowed for every two baggage animals; they must suffer; if not properly cared for; to give fewer therefore is false economy; moreover it is not practicable for one man to water, feed, clean, load and look after the gear of more than two animals,—the driver's work commences at the end of the march; and before he can cook his own food, he must see to the comfort and well being of the animals he has charge of.

It is impossible to over-estimate the importance of having the transport arrangements complete in every detail; the finest Troops in the world are powerless if immovable; and unless the fittings, &c., are carefully studied and prepared beforehand, it is a mere waste of money and labor to attempt to do so at the time of action.

What can be more hopeless than to see a number of mules taken out of one vessel and a number of saddles, &c., out of another, and then to endeavour to fit each animal, with no time or appliances to alter the padding or straps, or probably with no one present capable of judging whether any alteration is necessary,—harness and saddles made for big horses are put on small ponies, resulting in the first march with a galling which increases day by day, until the animal has to be sent to hospital or left to die on the road.

Whether animals are taken from India, or whether they are purchased in other countries, each one should be carefully fitted with a saddle or harness *before embarkation*.

For the saddle, none will be found so thoroughly serviceable as that known as "Hughes' pattern," which consists of a framework of angle iron on a properly stuffed pad; every description of load, whether tents, bedding or forage, can be securely fastened on; it has been tried on the Punjab Frontier for years, and its superiority over all other pack saddles has been proved.

The one essential is, that the iron pack should be made up in an Arsenal and not by contract; the necessity of the iron frame work is an accepted fact, and, being so, it is a *sine quâ non* that it should be constructed of the best material and workmanship, otherwise it would require constant repair, and for a campaign would be useless.

There should be three sizes of saddles, as mules differ very considerably both in shape and size, and a sufficiency of spare material should be taken to admit of the pads being stuffed daily, as will most assuredly be found necessary. Before starting, pads can scarcely be too much stuffed, for after every march the stuffing gets consolidated, and the mules fall off in condition, and the most careful supervision is required to prevent the iron frame work from pressing on the ribs, and thus causing serious wounds.

In almost every country in which mules are used for loads, a different kind of pack saddle is adopted ; but in every description of saddle, the same care and attention are required to guard against the animals becoming unserviceable from galls in the back, hip or shoulder, indeed, it is not possible to lay too much stress on this point. At the end of the march, after the animals have been allowed to cool, each one should be carefully examined to see that there are no incipient swellings or abrasions, and each pack saddle overhauled in every particular, padding should be renewed, straps lengthened or shortened as found to be necessary ; and if the galls have been caused by bad loads, the loads should, if practicable, be changed, or, by the end of the following march, the animal will, in all probability, be quite unserviceable.

All available Maltese carts or other similar vehicles adapted for light draught over indifferent roads should be sent with the force ; they are invaluable for transport purposes, and would be most useful either in Egypt, China, or a country like Abyssinia. To draw these, under-sized stud-horses might be used with advantage.

During the last campaign in China, a Coolie Corps pronounced to be a "decided success" was organized at Canton ; this should be done again in the event of a war with China, if not at Canton, at some other locality found convenient ; and on the first notice of war being declared, no time should be lost in starting it. The advantage of taking men from the South to the North of China, or *vice versa*, is that there is no sympathy between the races ; the very language is different, and the men know that, if they desert, no mercy will be shown them by their countrymen.

In Egypt, the supply of camels is practically speaking, unlimited, and they are better adapted for transport purposes in that country than any other animal. Arrangements should be made for a sufficient number being collected, and told off to the several Brigades before the Troops arrive at the port of debarkation.

#### EQUIPMENT.

It is of the utmost importance that any Force leaving the shores of India should be efficiently equipped in every particular, indeed the success of a small Army entering an enemy's country depends entirely on the completeness of its organization ; no expense should be spared to make this perfect, and nothing that can possibly be required should be omitted.

The soldier should have but one uniform, and nothing answers so well as a blouse or Norfolk jacket made of good English serge ; it should be loose, fastened round the waist by a belt, with two or three buttons, so as to admit of a thick jersey, kummurbund, or a second flannel shirt being worn beneath in cold weather.

Instead of two canvas frocks ordinarily issued to British Troops on board ship, one canvas frock and a second serge jacket should be given,

the latter would be quite as useful at sea and would serve afterwards as a change. Serge is light, and at the same time warm; it can be rolled up into a small compass and washes admirably.

Each British Soldier should embark with the following kit :

|                        |     |       |                                                                             |                                                                                         |                                                                           |
|------------------------|-----|-------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| In wear—               |     |       | 1                                                                           | serge suit.                                                                             |                                                                           |
|                        |     |       | 1                                                                           | helmet.                                                                                 |                                                                           |
|                        |     |       | 1                                                                           | flannel shirt.                                                                          |                                                                           |
|                        |     |       | 1                                                                           | pair of warm drawers.                                                                   |                                                                           |
|                        |     |       | 1                                                                           | „ socks.                                                                                |                                                                           |
|                        |     |       | 1                                                                           | cholera belt.                                                                           |                                                                           |
|                        |     |       | 1                                                                           | pair of boots.                                                                          |                                                                           |
|                        |     |       | *1                                                                          | „ gaiters.                                                                              |                                                                           |
|                        |     |       | 1                                                                           | Water-proof sheet.                                                                      | Worn in a roll over the shoulder with the canteen and tin-pot on the top. |
|                        |     |       | 1                                                                           | great coat.                                                                             |                                                                           |
|                        |     |       | 1                                                                           | Metal water canteen covered with canvas.                                                |                                                                           |
|                        |     |       | 1                                                                           | clasp knife tied to the waist, and                                                      |                                                                           |
|                        |     |       | 1                                                                           | haversack, containing one day's rations, a fork, a spoon, a towel, and a pair of socks. |                                                                           |
|                        |     |       | These, with his rifle and 60 rounds of ammunition would not exceed 43† lbs. |                                                                                         |                                                                           |
| † Great coat           | ... | 7 8   |                                                                             |                                                                                         |                                                                           |
| Waterproof sheet       | 5½  |       |                                                                             |                                                                                         |                                                                           |
| „ x 8                  | ... | 5 8   |                                                                             |                                                                                         |                                                                           |
| Tin-pot                | ... | 1 0   |                                                                             |                                                                                         |                                                                           |
| Knife, fork, and spoon | 0   | 11    |                                                                             |                                                                                         |                                                                           |
| Towels, 6 oz., pair    | ... | 0 10  |                                                                             |                                                                                         |                                                                           |
| socks 4 oz.            | ... | 2 0   |                                                                             |                                                                                         |                                                                           |
| Sodawater bottle, full | ... | 0 12  |                                                                             |                                                                                         |                                                                           |
| Haversack              | ... | 2 12  |                                                                             |                                                                                         |                                                                           |
| A day's rations        | ... | 20 13 |                                                                             |                                                                                         |                                                                           |
| Arms and accoutrements | ... | 16 2  |                                                                             |                                                                                         |                                                                           |
| Ammunition             | ... | 5 7   |                                                                             |                                                                                         |                                                                           |
| Total                  | ... | 42 6  |                                                                             |                                                                                         |                                                                           |

To be carried for him—

|                                                                                                                        |     |      |     |
|------------------------------------------------------------------------------------------------------------------------|-----|------|-----|
|                                                                                                                        |     | lbs. | oz. |
| 1 spare suit of serge                                                                                                  | ... | 3    | 6   |
| 1 flannel shirt                                                                                                        | ... | 0    | 13  |
| 1 warm blue jersey                                                                                                     | ... | 0    | 13  |
| 1 pair of warm drawers                                                                                                 | ... | 0    | 14  |
| 1 pair of boots                                                                                                        | ... | 2    | 14  |
| 1 blanket                                                                                                              | ... | 6    | 0   |
| A comb and brush, piece of sponge, a cholera belt, warm woollen night-cap, a calico bandage, and a small clothes brush | ... | 2    | 0   |
| A Bible and Prayer Book between two men each                                                                           | ... | 0    | 11  |
| All to be rolled up in a bag which will form a pillow and will weigh about                                             | ... | 2    | 0   |
| Total                                                                                                                  | ... | 19   | 7   |

\* For all services—The mounted branches to wear pantaloons with the gaiters. Infantry and Foot Artillery a loose made trowser or knickerbockers, boots, and breeches do very well so long as a man is on horseback; but nothing can be more inconvenient than such things when on foot, whereas gaiters answer equally well for riding or walking, and should be generally adopted.

or say 20 lbs.

Each Native Soldier should embark with the following kit :

In wear—

\* For Sikhs, who instead of the cooking utensils named above, should be provided with dekchies of the Bombay pattern, fitting one into the other.

|                          | lbs.       | oz.          |
|--------------------------|------------|--------------|
| † Great coat             | ...        | 7 0          |
| Waterproof sheet 3' x 7' | 4          | 0            |
| Cooking pots†            | ...        | 5 0          |
| Haversack with do.       | ...        | 2 12         |
| A day's rations          | ...        | 2 8          |
| <b>Total</b>             | <b>...</b> | <b>21 4</b>  |
| Arms and accoutrements   | 16         | 2            |
| Ammunition               | ...        | 5 7          |
| <b>Total</b>             | <b>...</b> | <b>42 13</b> |

1 serge suit.

1 helmet.

1 suit of Native clothes (generally worn under the uniform).

1 cholera belt.

1 pair of shoes.

1 pair of gaiters.

1 water-proof sheet. { Worn in a roll over the shoulder with a few cooking utensils on the top.

1 great coat.

\*1 metal water canteen covered with canvas.

1 haversack containing one day's rations, a *thalee* and *tawa* for making bread.

These with his rifle and 60 rounds of ammunition would not exceed 43 lbs.†

|                                                            | lbs.       | oz.        |
|------------------------------------------------------------|------------|------------|
| † 1 bullooa for cooking dal                                | ...        | 2 4        |
| 1 <i>kutrore</i> for holding ghee and a spoon fitting into | ...        | 0 8        |
| 1 brass bucket with cover for water                        | ...        | 2 4        |
| <b>Total</b>                                               | <b>...</b> | <b>5 0</b> |

To be carried for him—

|                                                    | lbs.       | oz.         |
|----------------------------------------------------|------------|-------------|
| 1 spare serge suit                                 | ...        | 3 6         |
| 1 Native suit                                      | ...        | 1 8         |
| 1 pair of shoes                                    | ...        | 1 4         |
| 1 blanket or quilted razaie                        | ...        | 4 0         |
| 1 cholera belt and brush                           | ...        | 0 6         |
| Additional articles which Natives require, such as |            |             |
| dohur, chudder, dhote, doputta, koorta, mirzai &c. | 3          | 4           |
| <b>Total</b>                                       | <b>...</b> | <b>15 0</b> |

As a rule, and when arrangements cannot be made for the light articles enumerated being taken as fast as the Troops march, it is far better that they should be carried by the men themselves; the extra weight is more than compensated for by the convenience of having an outer coat at hand to put on in the event of bad weather, and the utensils ready for cooking a meal as soon as the halt is sounded; but on ex-

traordinary occasions such as a forced march, or in a difficult country, or when it is desirable that the Troops should arrive at their destination fresh, either when an engagement is anticipated, or when any entrenching work has to be carried out, every thing but the arms accoutrements, and ammunition, should be carried for the men, care being taken that the great coats, water-proof sheets, cooking utensils, &c., are kept with the column, so that in the event of a sudden halt, or of the heavy baggage being delayed, the men will have something to fall back upon.

The above scale gives therefore the following weights for which transport will usually be required, viz :—

|                                                                                | lbs. |
|--------------------------------------------------------------------------------|------|
| For each British Soldier ... ..                                                | 20   |
| " " Native " ... ..                                                            | 15   |
| And in proportion for each Warrant and Native Commis-<br>sioned Officer ... .. | 25   |
| Each British Officer ... ..                                                    | 50   |
| Mess for every six Officers ... ..                                             | 75   |
| Cooking utensils at the rate of 1lb. for every British<br>Soldier.             |      |
| Quarter Master's stores per British Regiment ...                               | 150  |
| " " " Native ...                                                               | 100  |
| " " " Battery of " Horse and Field<br>Artillery ... ..                         | 75   |
| Quarter Master's stores per Garrison Battery ...                               | 40   |
| Hospital stores per cent. of British Soldiers ...                              | 80   |
| " " " Native " ...                                                             | 20   |
| No allowance for followers.                                                    |      |

Kits should be carefully inspected and weighed before embarkation, and every thing in excess of the regulated scale should be left behind; the debarkation would then be simple, and there would be no collection of heavy boxes and useless articles at the point of landing.

16. As soon however as it could be arranged, a large supply dépôt should be formed for the purpose of providing the several necessities required by Officers and men; cost prices should be charged, and every endeavour should be made to ensure the list of articles being as complete as possible.

Should there be any likelihood of Troops being detained in the North of China during the winter months, poshteens and fur clothing should be sent to the supply dépôt for distribution gratis to the Soldiers, and at cost price to the Officers.

18. If these suggestions are carefully carried out, there would be no hardship in requiring the Troops to embark with the kit above laid down; it contains as much as any one can want for three or four months campaigning, during which time arrangements must be made for the supply of new articles.

The followers should be reduced to a minimum, and none but the following should be allowed to embark, *viz* :

For every three horses of Batteries of  
Artillery and Regiments of British  
Cavalry ... 1  
For every six horses of Native  
Cavalry ... 1  
Cooks

For each Battery of horse and  
Field Artillery ... 6

For each Garrison Battery, Troop  
of British Cavalry and Com-  
pany of British Infantry ... 3

For the British Soldiers attached  
to each Company of Sappers  
and Miners ... 1

Artificers\* per Battery ... 10

" per Regiment Bri-  
tish Cavalry ... 12

Bheesties and Hospital Establish-  
ments according to regulations.

Bell tents or small pauls†  
weighing complete not more than  
75lbs. should be provided accord-  
ing to the following scale, and in  
addition, a considerable supply of  
larger tents, such as the ordinary  
European Privates' double poled  
tent, should be shipped for use as  
depôt hospitals, or as a standing  
camp at the port of debarkation, in  
case of more permanent shelter not  
being procurable.

*Tents.*

Every 3 or 4 Field Officers ... 2

Officers of each Battery of Artillery ... 2

" " Troop or Company ... 1

" " Regiment of Native Cavalry and Infantry ... 3

Every Staff Officer, not Regimental ... 1

Staff of each British Cavalry and Infantry Regiment ... 1

Medical Officers of " " " " " " ... 1

Every 14 British Non-Commissioned Officers and " men ... 1

" 6 Native Officers ... 1

" 18 " Non-Commissioned Officers and men ... 1

Guard and Hospital British Infantry ... 4

" " " Cavalry, Batteries of Artillery and

" Native Regiments ... 2

Stores per Regiment and Battery ... 1

Hospital Establishment and Battery ... 1

With each Troop of British Cavalry. Battery of Artillery, and Com-  
pany of Infantry, (British or Native)

\* It would, perhaps, be desirable to  
increase the number of European Artifi-  
cers with the Regiments of Cavalry and  
Batteries of Artillery, and reduce the  
Native Establishments.

† Pauls are preferable in every way ;  
they are warmer in cold weather, and  
cooler in hot, and when desirable they  
can be joined together end on, and a large  
tent thus formed, but on no account  
should the entire weight of each be *more*  
than 75 lbs., 70 lbs. would be even better,  
for after rain the weight increases  
considerably.



4 fowrahs or spades,  
2 bill hooks and  
2 hand axes should be

sent to be carried, except in the Artillery, with the cooking utensils.

A few spare mussucks should be sent ; and if the operations are to be carried on in a country where water is likely to be scarce at any season of the year, "chaguls" should be freely supplied.

If possible, the whole of the Infantry should be armed with breech-loading rifles.

Ammunition should be provided according to the following scale :

Artillery 600 rounds per gun.  
Artillerymen 100 rounds per carbine.  
Cavalry 100 rounds per carbine,  
Infantry 1,000 rounds per rifle.

In the Artillery and Cavalry no special arrangements are necessary for the distribution of the reserve ammunition, but for the Infantry, especially, when the men are armed with breech-loading rifles, it is of the utmost consequence that the "Regimental reserve" should be large, not less than 140 rounds per man, and for this amount transport to accompany each Corps should be provided ; with the Field Arsenal there should be 200 rounds per man, and the remaining 600 rounds may then with safety be left at the grand depôt.

#### COMMISSARIAT ARRANGEMENTS.

In the event of operations being carried on in a country like China or Abyssinia, where little or no facilities for transport exist, in addition to the number of transports given above other vessels will be required for the special conveyance of the animals and stores belonging to the Ordnance, Medical, and Commissariat Departments, though no doubt with proper management a very considerable quantity of the stores could be sent in the Troop ships.

The simplest plan is to place on board each vessel, in addition to the rations for the voyage, three months' shore rations for men, and one month's shore rations for animals ; in the event then of there being any delay in the voyage, or of the Troops being landed at any unexpected point, no anxiety need be felt regarding their provision. The actual tonnage for the above is easily calculated, and all remaining space is available for general cargo. As each vessel is taken up, arrangements should be made in communication with the Ordnance, Commissariat, and Marine Departments for this space being properly filled ; the nature of stores, whether light or heavy, the vessel can most conveniently carry, should be specified, as also the order in which they should be stowed, and the dates on which they will be received on board.

All stores should be carefully marked, and a list of every thing put

on board should be furnished to the Officer in command of the Troops for delivery to the senior officer at the port of debarkation.

Too much attention cannot be paid to the arrangement of stores on board transports; it must be remembered that at the point of disembarkation labor may be scarce, and that all work may have to be done by the Soldiers and Sailors themselves; the whereabouts of every thing must therefore be known, and every article likely to be required in the early part of the operations must be easily getatable. Unless this is seen to, the Army will be crippled on first starting, and large sums of money will be thrown away in providing material which can never be made use of.

As hay is always more or less scarce in Calcutta and the intermediate Ports of Hong-Kong, Shanghai, &c., early arrangements should be made for a sufficient supply of compressed forage or hay being sent from England in bales weighing not more than 70 lbs. or 75 lbs. each, two of which could be carried by one mule or by three coolies, should it be found necessary to take any beyond the seaboard.

#### MEDICAL ARRANGEMENTS.

One medical department should be formed for both British and Native Troops; however well a separate organization may answer in times of peace, during war it is essential that there should be but one head and one administration throughout.

Hospital ships for the reception of sick and wounded should be prepared immediately that war is determined upon: they should be fitted up with standing bed places, and should be as airy and open as possible, about 300 cubic feet being allowed for each person.

Condensers should be fitted up in each vessel, and the greatest care should be taken that the vessels are kept pure; the hold should always be well looked after, and foul smells chased away by cleansing and a free use of disinfectants.

Every arrangement should be made to render the hospital ship as similar as possible to a hospital on shore; the Medical Officer in charge should be supreme, and not under the direct control of a combatant Officer, all of whom can be better employed with the Troops on shore. In order, however, to carry out discipline, every ship should be visited daily by a Staff Officer, or the Officer on daily or weekly duty at the port, by whom crimes could be enquired into and minor punishments awarded, all serious offences being entered in the hospital defaulters' book to be dealt with on the man's return to duty, as is done in regimental and general hospitals.

For every two or three hospital ships a Chaplain should be appointed, and, to make the vessel as comfortable as possible, a small library of amusing books, a weekly supply of English papers, and a few games such as chess, draughts, dominoes, &c., should be provided; good Soldiers

chafe at being left behind whilst their comrades are winning honor and glory in the front. Every thing should, therefore, be done to employ their minds, and lessen the feeling of regret and disappointment which comes over a man when he finds himself unable for work, at the very time when his services are most required.

To each Regiment and Battery, a certain number of doolies will be attached, which answer better than anything else for the conveyance of wounded men off the field; but in order to remove these men as quickly as possible to the general hospitals in the rear, and to prevent the field and regimental hospitals becoming crowded some sort of ambulance is required. Should no pattern of ambulance have been decided upon in time, it is suggested that a number of light carts something similar to the Irish car should be sent; they travel well over bad roads, can be drawn by one horse, and accommodate from five to seven men, two or three sitting on either side, and one lying on the well in the middle, in which a small supply of medicines, bandages, &c., could be carried.

#### GENERAL REMARKS.

The arrangements for the Ordnance and Engineer Parks can best be considered by the Officers Commanding the Artillery and Engineers, but care must be taken that pontoons and a sufficiency of material for crossing rivers and canals accompany the Force; these are especially necessary in a country so intersected with rivers and canals as China is.

No Civilian clerks should be permitted to accompany the Force, nor should any Civil Establishments be allowed in the Post and Telegraph Offices; many Soldiers already know sufficient of telegraphy to be employed as signallers, and for the routine work of the Post Office; no special training is necessary.

The bags for the several Divisions, Brigades, and Regiments, should be carefully made up at the general dépôt in the rear; and, when received at head quarters, should be despatched to the Assistant Quarter Master Generals of Divisions, under whose arrangements they should be distributed; in the same way, letters should be made up for despatch. No stamps should be required, and the addressees should only be called upon to pay the ordinary rate of postage; nor should any money be collected on unstamped or underpaid letters; the loss is a mere trifle, and is certainly not worth the extra labor and establishment required to collect it.

At the points where the Troops leave the coast, a general dépôt should be formed where all stores for particular Regiments could be received, and all documents connected with men ordered to England or sent on board hospital ships could be made out. An intelligent Non-Commissioned Officer or Soldier who writes well of each Regiment should be left at this dépôt, and an experienced Officer, either one who has formerly commanded a dépôt, or, perhaps better still, one who has officiated as a Military Store-Keeper should be placed in command. The supply

depôt above recommended might conveniently form a portion of this general dépôt.

A dépôt is also necessary in some convenient locality in India for the protection of the families and sick of each Native Regiment ordered on foreign service ; it would probably be found that one dépôt could answer for two, three, or even more Regiments ; the work is not irksome, being chiefly connected with payment of remittances, and with the care of the effects of men who may die while absent ; but it is very essential that the duty should be carried on efficiently, and, if possible, an Officer should be selected in whom the Soldiers have confidence. Nothing would cause men to dislike foreign service more than a feeling that their private concerns were neglected during their absence ; like all mercenaries, the Soldiers of India are only too glad to go to any place where there is a chance of making money, but every care must be taken that the sums remitted by them for the benefit of their families are regularly paid, and that the families themselves are properly looked after.

A proportion of Native naldunds and a few blacksmiths will be required for baggage animals, repair of pack saddles, &c., and a few extra mules for the carriage of the stores required for these purposes.

If possible, no vessel containing Troops or any number of followers should be despatched without a Medical Officer being on board.

Photographers should accompany the Force.

FRED. S. ROBERTS, *Lieut.-Col., R. A.*



# On the Dress of the British Army in India, European and Native.

BY LORD LYON.

---

*[Published with the permission of the Adjutant General.]*

---

"The dress of the British Army in India, European and Native," is a subject of great importance and interest in many points, as on it depends in a great degree the health, efficiency, and comfort of our Soldiers. This subject has attracted the attention of many able men from time to time, who have written at length on it, and who have been the means of introducing many reforms and improvements. It is, therefore, difficult to avoid travelling in their footsteps. Nor can it be doubted that to enlarge on their views and maxims will be partly the best plan for carrying out improvements in the clothing of our Troops.

The subject may be conveniently divided into two great sections, viz., I.—The dress of the European Troops ; II.—The dress of the Native Army.

## I.—THE DRESS OF THE EUROPEAN TROOPS.

The great objects of a soldier's clothing in India are protection against warmth and against cold and wet ; the minor considerations have reference to comfort in fit and appearance on parade.

Thus two important points arise for discussion, namely, 1st, the materials of clothing ; 2nd, the make of the several articles of dress.

1st.—The materials of a soldier's clothing in India are—(a) cotton (b) wool, (c) leather.

The advantages of garments made of cotton are cheapness and durability. The disadvantages are 1st, it is a great conductor of heat ; 2nd, it is a bad absorber of moisture. Its cheapness and durability make it a most suitable material for the garments of our Troops in India. Hence we find it worn during the day by all our Troops in India in the hot months, and generally after the rains ; in the cold weather woollen clothing is worn day and night by the Troops.

Cotton, by its toughness and strength of texture, is peculiarly suitable to Indian usages, remarkable among which may be mentioned the mode of washing and the constant washing to which white clothing is subjected.

It is universally acknowledged that it is injurious to wear cotton shirts next the skin, as cotton conducts heat so rapidly and absorbs so little water of perspiration that it is likely to produce chills after any exertion, and thus cause liver diseases, bowel affections, and fevers.



Wool, by its properties of slow conducting power and free absorption of perspiration, is *par excellence*, the material for under-clothing in India at all seasons by day and night. The property of "hygroscopic absorption"—the manner in which water penetrates the individual wool fibres and distends them—is the one which enhances the value of wool for clothing purposes.

During exertion the evaporation of perspiration from the surface of the skin acts as one of the great cooling powers of the body ; and, when the exertion is over, this vapour from the skin is condensed in the wool, and returns to the body the great amount of heat rendered latent when the water was vaporized ; thus chills are kept off, and a pleasant warmth is felt, contrasting favourably with the dangerous and uncomfortable cold wet feel of a linen or cotton shirt.

Woollen under-clothing keeps the skin in a state of hygienic moisture, and from its bad conducting power is warmer than cotton or linen and a better protection against cold winds. The great disadvantage of woollen clothing is the way in which it shrinks after repeated washings ; and when a woollen garment gets old, it loses a great deal of its heating properties and becomes hard and thin.

Leather, as it enters into the formation of boots only in India, demands a short description. It is generally of excellent quality now, and the boots for the Troops are made up at home. When the question of the make of garments comes to be discussed, boots will meet with a proper share of attention.

As in India the great object of clothing is protection against heat as regards European and against cold in the case of Native Troops, it will be sufficient to describe the properties of cotton and wool when made into garments. To protect the body from the direct rays of the sun, the color and not the texture is the important element. Of all colors, white is the best ; next in the order of merit comes grey, then yellow, pink, blue, black ; therefore it is manifest why white American Drill has been adopted as the dress of Europeans during the greater part of the year, and of Native Soldiers in the hot weather months.

It is, however, to be remarked that, in the shade, we estimate the qualities of a garment as to its heat-giving powers by its texture, thickness, and its conducting power, and not by its color. The thicker a garment, and the lower its conducting power, the hotter it is. Leather is the next hottest material for clothing after wool ; it does not let any wind blow through it, and keeps in a good deal of perspiration. India-rubber is the hottest material of clothing, as it entirely prevents any perspiration evaporating from the surface and hinders the entrance of cold wind.

Wool possesses the properties in addition of being the best absorber of perspiration and odours ; and if the garment is black, it will absorb odours better than one of any other color, the order of merit being black, blue, red, green, yellow, and white.

It is a disputed point as to whether flannel under-clothing is a protection or not against malaria. I am inclined to think it is, as it has been stated by some that soldiers who wear flannel shirts suffer less from fever than those who wear cotton ones. Combe asserts that at Rome wearing flannel under-clothing has some effect in lessening the risk of malaria. On the West Coast of Africa, wearing flannel under-clothing has been tried with good effect, not only as regards malaria, but as touching other diseases. It is, therefore, to be strongly recommended in India for the same purpose.

#### THE MAKE OF GARMENTS.

The variety of garments worn by the Troops in India is great. The European Soldier has a multiplicity of articles in his kit, which may be considered under the heads of (a) under-clothing and (b) outer-clothing.

Under the heading of inside-clothing the most important things to be considered are shirts and socks. Drawers are only worn by a few, it would, however, be a great improvement if they were worn by all European Soldiers, whenever they wear black cloth trowsers.

Cleanliness and comfort would thereby be greatly promoted, as the accumulated perspiration and cutaneous exhalations in a black cloth trowsers, never washed, makes the garment a suitable abode for vermin, and perhaps cause skin diseases. Drawers form no part of a Soldier's kit, but it would be a vast improvement, if a couple of pairs of thin cotton drawers were kept up by each man, and the cost to him would be trifling.

Shirts are the most important part of a Soldier's under-clothing; and there are two kinds of shirts in use in the Army—flannel and cotton. Each European Soldier is required to have in his kit either two flannel or three cotton shirts. At home most men keep cotton shirts; but in India, where they have more money at their disposal, flannel shirts are preferred generally. The men like cotton shirts for their cheapness and durability; but unless a flannel vest or Jersey is worn inside the shirt, next the skin, a cotton shirt is unsuitable for wear in India. These flannel vests may be had at the Quarter Master's stores for Rs. 1-14 each, and, when worn under a calico shirt, a man may be said to be suitably under-clothed.

As regards flannel shirts they are theoretically the best under-clothing for the reasons stated in the beginning of this essay; there are, however, some important practical objections to their use in the Army; for instance, they require more constant washing than cotton shirts, and they are apt to shrink and become hard from constant washing; this shrinking is most apparent about the collar and sleeves, preventing these parts from being buttoned, and so making the shirt uncomfortable.

Moreover, it is probable that in time of war scarcity of water would render the washing of flannel shirts a matter of difficulty; but this ob-

jection would equally apply to shirts of any material; and a flannel shirt may be rendered partially clean by Parkis's plan, namely, exposing the shirt to the sun, beating it and shaking it, and then wearing it day about with the other flannel shirt, as each man is supposed to have two in his kit. By this plan much dirt and many vermin are got rid of.

On active service none but flannel shirts should be worn by European Soldiers; and I might suggest as an improvement that all flannel before being made up into shirts for the Army should be well shrunk by steeping in hot water for one hour, and then slowly dried by evaporation; hanging in the air will do: it should not be squeezed: this process is then to be repeated with cold water.

I have tried this plan with success, and strongly recommend it. Another plan is to have the collars made of strong linen of the same color as the shirt, and at the same time the wrist bands or cuffs might be of the same material, with a tuck in the sleeve to be let out when necessary. By adopting any of these plans, the present regulation grey flannel would make a capital shirt.

An objection to the present flannel shirts has been made, namely, that they are too hot and irritating for India, where boils and prickly-heat prevail. There is no doubt some force in this objection, and the plan recommended by Dr Parkis might be tried, *viz.*, mixing about 30 per cent. of cotton with the wool; this would make the shirt much cooler, and would almost prevent shrinking from constant washing.

#### SOCKS.

Woollen socks are issued to the Soldier from the Quarter Master's store: a mixture of equal parts of cotton and wool would be better: it would be a good plan if all socks were well shrunk before being tried on. Each European Soldier has three pair of socks in his kit.

#### OUTER-CLOTHING.

The outer-clothing worn by the Troops varies according to the several branches of the service, and the season of the year. European Cavalry and Artillery wear their English tunics or stable jackets during the monsoon and cold weather months generally; and in the hot weather a white jacket of American Drill. Trowsers of a color and material the same as the coat are worn at the same time.

That a thick English cloth tunic or stable jacket is an unsuitable dress for Europeans in India is a notorious fact, and a change has been frequently recommended. It would certainly be a boon to Cavalry and Artillery Soldiers to have a loose comfortable blue serge patrol jacket of somewhat the same pattern as that worn by the Infantry, in place of their present tight uncomfortable tunics and stable jackets. Their duties in the stables and gun sheds are much more arduous than those of the Infantry Soldier, whose work is almost *nil*. The shell jacket is not suitable for India, and is not generally worn. Colonel Bray, 4th Foot,

has devised a waistcoat with sleeves: it is meant to be worn inside the red serge, and it would be particularly valuable to troops stationed on the hills or in cold stations in the north of India.

The red serge worn by British Infantry is a capital dress for India, or any country occupied by our troops, Canada excepted. It has been adopted for the Army serving at home under the name of the Norfolk jacket. The only improvement I could suggest in it would be, that it should have four eyes on each side of the back seam on the inside of the coat, extending from the collar twelve inches down the back; the eyes on opposite sides to be three inches apart: to these eyes a flat pad made of linen or canvas and containing cotton wool could be hooked on; this pad would be twelve inches long by three wide: it would lie on the backbone, and being inside the coat would be unseen and form a perfect covering to the spine in the hot season: it is a well-known fact that the sun has a very powerful effect on the spinal cord, and that this delicate organ requires protection from the direct rays of the sun. This pad would be one inch thick, and lying along between the shoulder blades inside the coat, would defy detection and thus be no eyesore.

I have taken this idea from the dress worn by shikarries and others travelling in the jungle in the hot weather. I have latterly worn this pad on my own shikar coat, and have experienced the greatest comfort from it in the hot weather. In all Indian stations in the hot weather it would be a cheap, simple, and, I believe, a valuable contrivance against sun-stroke: its price would not be more than a couple of annas, and by having two of them, a Soldier could have one on his red serge and the other for his white coat: the eyes on the latter should be made of thread so as not to iron-mould the coat in washing.

The white American Drill makes a capital coat, and is worn by all European Troops in the day time, that is, from 9 A.M. to 5 P.M., in most stations nearly all the year round, in the hot weather it is worn by sentries at night. It would be an improvement if both the serge and white coats had pockets on the inside made of some strong material; these pockets might be placed two in front in the skirts and two on the sides; being inside they would be unseen and be a great convenience to a Soldier on a campaign.

#### TROUSERS.

Two kinds are worn by Europeans, white American Drill for the hot and black cloth for the cold weather months.

These pairs of trousers need no description; they are of good quality, a proper make and suitable to the seasons. With the black cloth trousers thin cotton drawers should invariably be worn for the sake of cleanliness as before mentioned.

Like many other things, it took a number of years before the present comfortable trousers were issued to the Army, the Soldier having first had to pass through the ordeal of breeches and gaiters, contemporary tortures with the black leather stock and tight coatee.

The most perfect trowsers for a Soldier is the peg-top pattern, loose over the hips and knees, and tight about the ankle; the latter a most useful safeguard against thorns, &c., to Troops marching through the jungle.

#### BOOTS.

Of all the articles of a Soldier's kit none are more essential to his comfort and efficiency than a good pair of boots (Duke of Wellington). The boots now issued to Europeans are an excellent ankle boot to the Infantry, and short Wellington's to the mounted Corps. The ankle boots lace up the front; they are large and comfortable with good wide heels and soles, and they do not compress the foot or cause the toes to override: they are well suited for marching and campaigning. The fact of having a low and wide heel and sole is of immense advantage as there is a good base to support the centre of gravity of the body, the line of which runs down through the middle of the heel: thus the greater part of the weight is borne by the strong heel bones as nature intended it should be, and the weight is not thrown forward on the toes.

Great care is taken at Pimlico in the manufacture of Soldiers' boots; the leather, stitching, and size are all tested: a certain number of boots in each lot are cut up and examined, and if the quality of the leather is inferior, or the number of stitches in a inch less than the standard laid down, the whole lot from which these boots were taken is condemned.

Mr. Dowie, a boot-maker in the Strand, London, has introduced a boot with an elastic instead of a rigid waist; the waist is the part connecting the heel with the sole; there is thus very little muscular effort required in bending the waist; as a military boot they have never been extensively tried, as they are rather more expensive than the ordinary boot.

"The Hythe Boot," introduced by Colonel Carter, is on the same principle, namely, to lessen the rigidity of the sole of the boot: his plan is to have a slit across the tread. On the whole it is a very doubtful if any of these boots are better for Soldiers than the one now in use; and as there are at present thirty-two sizes of boots, eight in length and four in breadth it must be a very extraordinary shaped foot indeed that cannot be fitted.

Mr. Dowie has written a book on the subject, and he states that at the battle of Maida, the Highlanders when ordered to charge had to stop and pull off their boots before they rushed at the French.

The Hussar boot and breeches are a more useful and serviceable dress for Cavalry than the present trowsers; they are also more comfortable and easier to ride in. Boots can be made water-proof in the following way: "Take half a pound of shoemakers' dubbing, half a pint of linseed oil, half a pint of solution of India-rubber, (price two shillings per gallon,) dissolve with gentle heat (it is very inflammable,) and rub on the boots. This will last for five or six months." (Parkes.)

## THE GREAT COAT.

This has been called the most important article of a Soldier's kit by many authorities, from the Duke of Wellington downwards.

The one at present issued to European Soldiers is of an excellent quality: it only wants a hood to go over and protect the head when a Soldier is campaigning, and a couple of pockets to make it perfect. A short description of the coat will suffice: it is made of stout blue cloth with red piping, it is double-breasted and a comfortable length.

In Scind and Northern Indian stations, where extremes of temperature occur in the cold weather season, sheepskin coats are worn by European Officers, and are a most perfect protection from piercing cold: in the Punjab and northern hill stations, where water freezes, a coat of this description ought to be issued to European sentries at night, and it would be the means, I believe, of lessening lung and bowel affections so prevalent in some of those localities.

A cloak is worn by European Cavalry and Artillery; it is larger than the Infantry great coat; the cape unbuttons and can be worn separately: when riding the cloak covers a considerable portion of the horse as well as the man.

## HEAD DRESS.

Helmets and forage caps of different patterns are worn by European Troops in India; the Cavalry and Artillery are much better off in this respect than the Infantry. The helmets of the former are made of leather with an inside chamber all around to allow the circulation of air: the outside of the helmet is kept white and shining by pipe clay, and a white cotton puggree is worn around the helmet. This is a capital head dress, it looks well and smart, and is a good protection to the head; a double iron hoop crossing at the top would give it increased strength to resist sword cuts.

In the Infantry a wicker work helmet is worn. The one now issued is a smart looking head dress; it is very light, and for the cold weather months is a sufficient protection to the head. It has, however, many disadvantages; for instance, it does not cover sufficiently the back of the head and upper part of the neck, and thus these parts are exposed to the sun: the material of which the helmet is composed is not suitable or sufficient to protect the head from the heat of the sun; something thicker and denser than wicker work is required, and this, I believe, would be found either in leather or hard felt; the shape should correspond with the one worn by the Artillery. This could be easily kept white and shining by pipe clay, thus having the double advantage of reflecting the light and heat, and doing away with the necessity of keeping topees covers and the trouble of putting them on. I am convinced that the head would be much cooler under a topee of this kind than under the present thin wicker work one, and the head would be safer from a sword



cut than it is now. The helmet should have the double iron hoop as before described.

It is a notorious fact that the wicker work helmet harbours bugs in great numbers sometimes, and when once they have taken possession of a topee, it is next to impossible to expel them: these filthy insects have a fine field for their operations when a man is drilling with his helmet on; they then travel undisturbed, consequently when the word "stand easy" is given, it is most suggestive to see the number of men who take their helmets off to disperse their tormentors.

As a decoration, a plume of the same shape and material as the Light Infantry plume might be worn on the helmet, where the present unsightly round knob projects; the plume might be the color of the facings, the staff of the plume should not project more than about two-and-a-half inches from the topee, with a slight inclination forwards: the plume would then hang back over the topee and would be ornamental.

In the dress worn by European Infantry the facings are not shown: a plume of the regimental color would show at once the facings of the regiment; it would make the men look taller, and would give the helmet a nice finish, making it an ornamental, martial-looking head dress: the appearance of a Regiment in line would by it be greatly improved. The plume could be easily taken out during the process of pipe-claying the helmet.

Light Infantry and Fusilier Regiments could have their distinctive marks in the plume. Various kinds of helmets have been proposed by different authors, Jeffreys, Miller, &c. The principle of all appears to be reflection of the solar rays by means of a bright metallic surface; the idea is theoretically correct, but it cannot be reduced to practice; 1st, because brass or steel helmets should never be worn in India, owing to the conducting power of these metals; 2nd, the expense of covering ordinary leather helmets with a bright metallic surface would be very great, as aluminium is the only metal light enough for a coating, and this is much too costly to be applicable to the purpose.

*Forage Caps.*—The old forage cap will soon be replaced in the Infantry by the Glengarry cap: this has been issued to some Regiments at Home, and it is to be hoped it will be brought generally into use; as no better undress cap could be possibly found, being soldier-like by day, and it forms at night a comfortable night cap, an important matter on active service.

The Cavalry and Artillery forage caps are smart and soldier-like; no change need be made in them.

#### DRESS OF OFFICERS.

Before going into a description of the dress of the Native Army, it may be advisable to make a few remarks on Officers' uniform in India.

Cavalry and Artillery Officers, like their men, wear during a part of the monsoon and cold weather months, the same thick cloth tunics, and patrol jackets as the men. The tunic is only worn on a few parades, but it would be a great boon to Officers and to the men if the loose blue serge jacket, of the same shape as the Infantry, took the place of the tunic and stable jacket in India. The serge jacket has been before described and could be easily made ornamental enough for these branches of the service : however it is to be remarked that gold lace or braid easily tarnishes from the heat, and when tarnished looks badly ; therefore the less of it worn in India the better.

In the Infantry, Officers dress in the same pattern coat as the men, red serge or white drill, according to the season.

## II.—THE DRESS OF THE NATIVE ARMY.

This important division of the subject will require a somewhat lengthened description, as there is no doubt whatever but that our Native Soldiers are both insufficiently and improperly clad. To begin with the Cavalry.

In the Madras and Bombay Regiments the turban is too small, it affords no protection from the sun or sword. Bengal Cavalry are infinitely better off in this respect, as in many others, than their fellow Soldiers in the other Presidencies. The Central India Horse have a fine handsome looking turban, which contrasts favourably with that of the Bombay Light Cavalry. Each sowar ought to be furnished with a "kaun topee" for night pickets and escort duty, &c. ; this would protect his head and ears, and it is a notorious fact that Natives are peculiarly sensitive as regards these parts, as may be inferred from the way in which they muffle their heads up.

The body clothing of the sowars is suitable enough. The coat wants a collar to fasten with hooks. This would improve the appearance of the coat and afford some protection to the neck. Flannel vests should be issued in the cold weather.

In Scind, the men in the Mountain Battery and Scind Horse wear sheep-skin coats in the cold weather, and a garment of this kind would be an admirable dress for sowars generally at early morning parades in the cold weather. The insufficient clothing of the men is unquestionably a powerful cause of lung diseases, fevers and bowel affections.

The Hussar boots and trowsers are very suitable and comfortable to ride in, no alteration need be made in them ; the leather is however apt to get hard and dry from the heat ; a suitable preparation of oil, &c., might be issued from the Quarter Master's stores to keep them soft.

## THE NATIVE INFANTRY.

This important section of our Indian forces is notoriously improperly clad in many respects.

After securing the body from effects of heat and cold, our object should be to provide a garment or garments of a soldier-like appearance, and that do not interfere with the movements of the body. Now it is very apparent that the present clothing of the Native Infantry embraces none of these objects. In the hot weather their clothing is too hot; in the cold weather it is not warm enough, and on the whole their appearance is cramped and their marching powers, naturally enormous, are marred by buttoning them up in a tight cloth tunic, and encasing their feet in ill-made heavy boots.

As regards the forage cap with its cotton puggree, no change need be made, as it is a sufficient covering to the head: it would look smarter if it was cut down a little as it is rather high.

*The Tunic.*—The best authorities on army clothing at home unanimously condemn the tight buttoned-up tunic, and regard it as a potent cause of heart and lung affections. (Maclean, Parkes, &c.) Their recommendations have been attended to, and the loose Norfolk patrol jacket is to be the dress of our men at home on all ordinary parades, the tunic being reserved for particular occasions. This is the plan I would recommend strongly as the most suitable for the sepoy; it would have many advantages, as his chest would no longer be fixed as if in a mould, and during active exercise the action of his heart and lungs would be unimpeded: the motion of his arms too is certainly restricted by the tightness of the present tunic which is an extremely badly fitted garment.

A red cloth patrol jacket of the same pattern as the one issued to European Infantry would be an admirable and serviceable dress for the cold weather months, and it should be supplemented in its heating powers by a woollen Jersey, which would cover the chest and abdomen. Thin Jerseys should be issued to the men from the Quarter Master's stores; their cost would be trifling, and they would be an invaluable preventive against pulmonic and bowel affections so prevalent among Native troops.

Uniformity on parade with European troops would be promoted; surely nothing can be more unsightly than the present tunic on a slight man—as nearly all Natives are—with its tight sleeves, and general bad fit. For the hot weather months the present white garment is suitable.

At night in the cold weather sentries should be invariably provided with an extra covering, such as a sheep-skin coat coming down to the knee. On active service each sepoy should have one of these coats: in times of peace it would be sufficient to have some in each regiment to be worn by the sentries at night.

#### TROUSERS.

The present black trousers if retained in use would require some important alterations to assimilate them as much as possible to the peg-top pattern, which is undoubtedly the most suitable for infantry soldiers.

It would be perhaps better to introduce the Zouave trowsers and gaiters ; the trowsers to be made of some thin material, strong and durable, to keep out thorns : they should be wide at the hips and contracted at ankles ; and the gaiters might be of plain unpolished leather, sambur skin for instance, with a good flap in front to cover the instep : the gaiters would go over the trowsers and need not go higher than six inches above the ankle.

#### BOOTS.

These encumbrances to a sepoy should be abandoned altogether, and light Native shoes substituted. Expecting celerity in movement from a sepoy wearing the present boots is out of the question, nor can they march in them without much suffering and foot-soreness. The boot is dirty too from the perspiration of the foot soaking into the leather as sepoys wear no socks ; and as a rule, escorts and the men of irregular corps when making long marches take off their trowsers and boots especially in the hot weather, and march in their own shoes ; the distance they can then march is astonishing.

This plan of giving the Native Infantry Zouave trowsers, gaiters and Native shoes, would be conducive to cleanliness, as at the end of a march the gaiters and shoes could be taken off and the foot cleaned : the foot also would be much more cooler and be better protected from thorns in marching through a jungle.

#### CONCLUSION.

Before drawing to a close it may be well to state that the writer's object has been to advance the principles laid down by such authorities as have paid most attention to the clothing of our soldiers, and to combine the author's own experiences on what is most useful and comfortable for India. The rude touch of war is the great test of the suitability of a soldier's dress. Under this searching trial every thing useless and uncomfortable will surely soon disappear, without any regard to the designs of the tailor or the orders of the martinet. Ornaments and useless encumbrances should never weigh against comfort, utility, facility of repair, and effectiveness.

Should the foregoing views on clothing tend to the improvement in comfort of the British and Native Troops, the writer's great wish shall have been fulfilled.



## Notes on the Field Equipment of Troops.

BY LIEUT.-COL. C. M. MACGREGOR.

### CAMP EQUIPAGE.

I PROPOSE first to consider the question of Camp Equipage, and it is evident that, in doing so, it is impossible to fix on any one form of tent which shall equally suit the exigencies of all the varied service required from it; and even if, by inventing a complicated form of tent with many extra flies, walls, cloths, &c. it were possible, it should be borne in mind that simplicity should be the first principle in all Military equipment, and that scarcity of transport may forbid our increasing weight beyond barest necessities.

Taking, therefore, for granted that the present E. S. D. P. Tent is the best suited for service in the plains of India either for ordinary route marching or when Troops have to seek refuge from cholera or other epidemic, it is best to limit this consideration to the tent best suited for the use of European and Native Troops in service among mountains, or beyond the sea, where carriage is scarce and the climate more temperate than that of India.

First then, what are the requirements of such a tent? Are they not?

Lightness; durability; imperviousness to rain, wind or sun; easy and secure pitchment; good ventilation; simplicity of construction?

Of course as regards the 3, 4, 5, 6, points, our Indian double and single poled double flied tents are superior; but they are so completely placed beyond the pale of consideration by their immense weight, that if we look to Indian tents at all, we must only take the smallest description, namely, the different Sepoys' Pals in use in the Presidencies; and by turning to Europe we shall not much increase our field of selection, for from the infrequent use of any camp equipage in European campaigns, no great experience has there been attained. The only European tents likely to suit our purpose, then, are the English single fly bell tent, and an improved double fly tent of the same pattern which was used in Abyssinia for Officers and Hospitals.

But with reference to our first desideratum, namely "lightness," what is meant by it? It is not merely that such a tent shall be light in comparison with its size, with the accommodation it affords, or the protection it gives from the weather, but that it shall be so light that two shall be carried on one mule, or one on one coolie, that is to say lightness means a tent weighing not more than 70 lbs., and there are very good reasons for taking 70 lbs. to be the maximum weight of a tent complete, for it is the ordinary load of a hill coolie; 2 such tents form a light load for a mule, 3 a fair load, 4 form a light load for a camel, and 5 or even 6 a fair load, 10 form a light load for the admi-



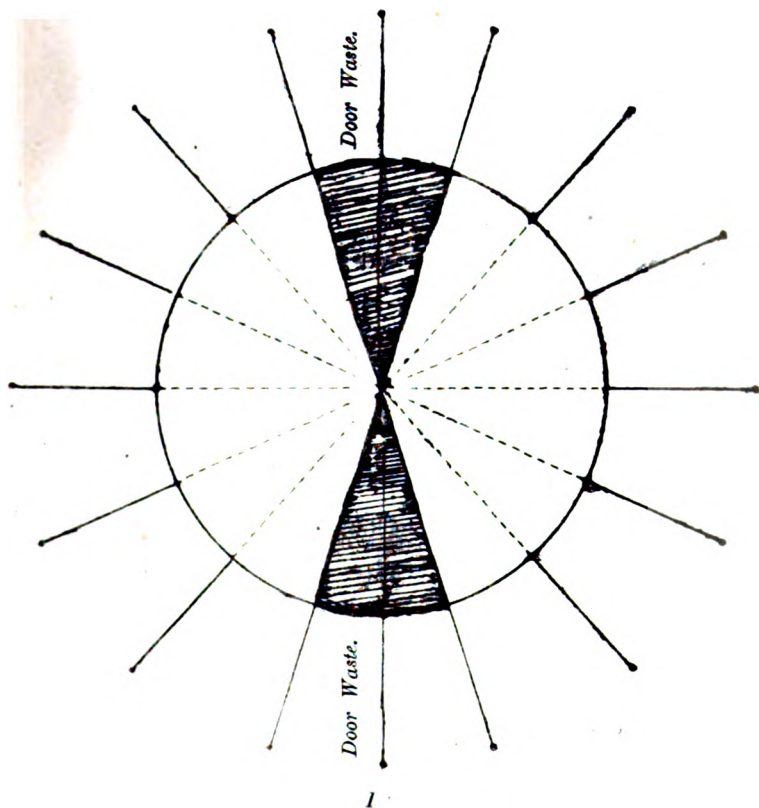
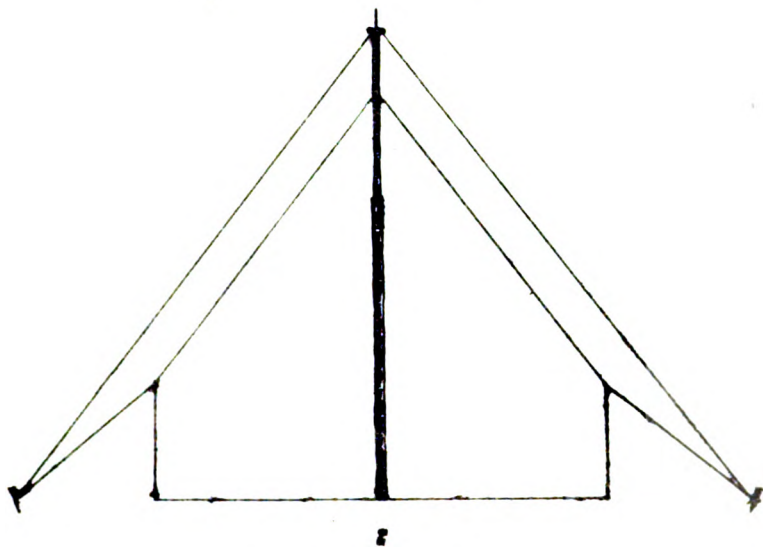
able Maltese cart, and 15 a fair one, and the same may be said of an elephant. Thus, this weight of 70 lbs. is suitable to all the different descriptions of transport likely to be employed on service of the above-mentioned description.

And the English single fly bell tent, which is the only one of this weight, has other advantages; it is most durable, it gives accommodation to a large number of men comparatively with its size, and it absorbs very little moisture. But, on the other hand, it is so pervious to sun, so wanting in ventilation, as to annul its other good qualities and make it unfit for any one to live in, even in a temperate climate. And this opinion is upheld by the experience of the China and Abyssinian campaigns, when these tents were used; by the opinion of Lord Napier, who, through his Quarter Master General, in a report, dated Zoolla, 1st June 1868, condemns the bell tent as "being very hot" and "not capable of keeping out the strong rays of the sun,"—by that of a Committee assembled at Sherghotty on 4th November 1859, who condemned some of these tents, which had been issued to the Ludiana Regiment, as being "totally unsuited for Troops either European or Native in an Indian climate, as they are of a single canvass and have only one opening, therefore no ventilation is obtainable, &c.,"—by that of Lord Clyde, who in forwarding the Proceedings of this Committee with his letter No. 4753, dated 15th December 1859, concurred with regard to their condemnation as follows: "and Lord Clyde thinks justly so, as they appear very inferior as regards the necessary shelter to the Pals now in use with Native Regiments, and he would recommend their being returned into store as soon as they can, and replaced by Pals, and not re-issued except in cases of emergency,"—and finally by the decision of Government on the same question, where, in Military Department letter No. 95, dated 5th January 1860, the Hon'ble the President in Council approves the above recommendation *in toto*. The question, therefore, of the suitability of the Bell Tent for even Native Troops is not a new one but has been considered and settled before.

It therefore only remains to discard it entirely, or to improve it, and there is no doubt it can be improved as was done for Abyssinia by the addition of another fly and a three-foot wall, thus making the tent very pleasant even in considerable heat, and when the old pattern was simply unbearable; and if in addition to these improvements another door was made immediately opposite, so as to admit of a free current of air passing through the tent, it would be nearly all that is required as regards comfort. But these alterations would very nearly double its weight.

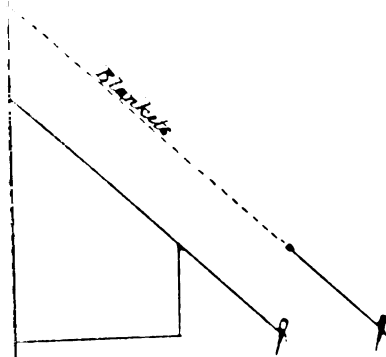
It will be well, therefore, to see if the other shaped tents do not admit of being improved without exceeding the maximum weight of 70 lbs.: we have seen that as regards shape, the Bengal Sepoy's Pal is perfect, but it is very heavy,—heavy however only because of the material it is made of, *viz.*, "dosootce," which for considerable weight, gives very little protection, and must be doubled or trebled to afford any, and which absorbs moisture to an immense extent.

DOUBLE FLY BELL TENT.





on C D.



light English Rope, Pegs, English Wood, Poles  
materials are vastly inferior as regards light-  
weight Bamboos could be used as poles.

er) or 8 or 6 or 3, vide Scale.

Length when stretched to full from A to B  
is closed, height of tent 7 Ft., ditto of Pole

bell tent.

tent that can be made. A double fly can be  
can be added together, so as to form one



If, therefore, a tent was made throughout, inclusive of pegs and poles, of exactly the same material as the English bell tent, it would combine the great lightness and durability of that pattern with the advantages as regards ventilation of the Pal. But without a second fly of some sort, it has been allowed that a single cloth of English linen is not sufficient, even with the better ventilation afforded by the pal shape, and as in giving this additional protection to the bell tent we find its weight to be nearly doubled, and as, moreover, the weight of the poles in a pal tent adds considerably to its weight, it becomes necessary, if we wish to keep down the weight, to do without this extra fly, and luckily the peculiar shape of the pal, aided by the very simple contrivance of making the poles longer, enables us to do this by using the men's blankets as an extra fly during the day, *vide* Figure 3, Plate II.

It may be said that the blankets could also be used for the bell tent, and thus also enable us to do without a double fly for it, but this is not the case, for the shape of the bell tent is so awkward as to make it nearly impossible to fasten blankets securely on it, and moreover, even if they could be so tied, it would not even then be nearly so cool as the pal shape; because beside the advantage the latter has from its two doors, the plan of having poles two feet longer than the height of the tent enables the blankets to be kept at least two feet off the fly,—an immense point, for immunity from heat does not so much arise from the number of folds in a tent as from the distance of these folds from each other.

A reference to the sketches which accompany these notes will show the details of the two descriptions of tent, *vide* Figures 1, 2, Plate I., and Figures 1, 2, 3, Plate II.

The writer has a tent of his own,  $10\frac{1}{2}$  feet long, 8 feet broad, 6 feet high, with an outer fly 2 feet higher, and weighing all complete 70 lbs. and costing about £ 8.

This was proved by actual experiment to be able to accommodate 12 Natives closely packed, 10 more comfortably, and 8 quite comfortably.

And it now only remains to lay down a scale of the proportion in which these tents shall be issued, and it may be better to premise this consideration by a remark that, on very many occasions during field service, it is far better to dispense with tents altogether, for however light and however portable they may be made, they still must add something to the baggage, and the number of animals, and that this can be done is proved by the experience of Ambeyla, Bhootan, and also in a measure by that of China and Abyssinia.

It will be seen also that, while these pals are fit for Troops on service in hills or in more temperate climates, they are fit for the use of Troops in ordinary route marching in the cold weather of Northern India, with the addition of a fly (the extra weight of which on such occasions would be no objection), and supposing the facilities for placing extra blankets are taken advantages of to their full extent.

Another advantage of the pal shape is, that any number of them can be added together, so as to give more heat in cold weather, to take advantage of limited space among mountains, and also for use as hospital and store tents on a large scale. It is adaptable for 10, 8, or 6 as a single tent, and for double, treble, or quadruple these numbers according to the purpose for which it is required, or to the number put together.

The scale I would propose is.

*For British Troops on Service, Cavalry, Infantry or Artillery.*

|                         |     |             |
|-------------------------|-----|-------------|
| Every 8 men             | ... | ... 1 Tent. |
| Quarter Guard           | ... | ... 1 "     |
| Rear "                  | ... | ... 1 "     |
| Magazine,,              | ... | ... 1 "     |
| Hospital for 50 men     | ... | ... 1 "     |
| Commanding Officer      | ..  | ... 1 "     |
| Every 3 other Officers  | ... | ... 1 "     |
| Every 6 Staff Serjeants | ... | ... 1 "     |

*Native Troops, Cavalry or Infantry, on Service.*

|                         |     |             |
|-------------------------|-----|-------------|
| Every 10 men            | ... | ... 1 Tent. |
| Hospital, every 75 men  | ... | ... 1 "     |
| Quarter Guard           | ... | ... 1 "     |
| Store                   | ... | ... 1 "     |
| Commanding Officer      | ... | ... 1 "     |
| Every 3 other Officers  | ... | ... 1 "     |
| Every 6 Native Officers | ... | ... 1 "     |

If this pattern were adopted, it would, of course, be so only prospectively, yet I think no new tents of any other pattern except this and the E. S. D. P. Tent should be made up, and all Native Troops throughout India should be provided with the same, as their regular camp equipage. There could then be no difficulty about Regiments of one Presidency being supplied from the arsenals of another.

Until one of these tents were made up, it is, of course, impossible to give an estimate of the cost, but it is not probable that it would cost more than a single fly bell tent.

#### PERSONAL EQUIPMENT.

Regarding the Regimental and personal equipment of Troops, it is evident, I think, that the question resolves itself into one of baggage, for, of course, it is easy to equip a Soldier to perfection, if no limit is placed on the amount of baggage which can be carried for him, but when not only a limit, but a very low one has to be placed, it is not so much what is perfection we have to consider, as what is best under the circumstances.

In a list of equipment supplied to Troops for service, the



first article to notice is the kit bag. This is an excellent article for ordinary route marching ; but inasmuch as it adds 5 lbs. 6 oz. to the weight, and is only useful as a kit bag, it is better to do without it, and in its place provide a strong water-proof sheet 7 feet by 4 with eyelet holes at intervals all round, so as to enable the Soldier to use it as a *tente-d'abri* if necessary, to afford ample protection to him from all damp and to pack his bedding in on the line of march.

The soldier should, therefore, have only the following articles of equipment :

| <i>On.</i>                     |           | <i>Off.</i>                     |            |
|--------------------------------|-----------|---------------------------------|------------|
| 1 flannel shirts.              |           |                                 | lbs. ozs.  |
| 1 cotton suit.                 |           | 1 cloth suit                    | ... 5 0    |
| 1 pair boots.                  |           | 1 serge do.                     | ... 2 14   |
| 1 helmet or turban.            |           | 1 water-proof sheet             | ... 3 0    |
| 1 kammurbund.                  |           | 1 English blanket               | ... 3 14   |
| 1 pair mail bag cloth gaiters, |           | 1 pair boots                    | ... 2 14   |
| and                            |           | 1 forage cap                    | ... 0 12   |
|                                | lbs. ozs. | 1 towel                         | ... 0 8    |
| Rifle and belts                | ... 13 4  | 1 flannel shirt                 | ... 1 0    |
| Mail bag cloth haversack full  | ... 3 0   |                                 |            |
| Water canteen                  | ... 3 1   |                                 | 19 14      |
| Cloak                          | ... 4 7   | Total carried for each man, say | .. 20 lbs. |
| 60 rounds ammunition           | ... 6 0   |                                 |            |
| Total carried by Soldier       | .. 30 0   |                                 |            |

The blanket should be grey, 7 feet by 4, with eyelet holes. The boots should be strong, made of soft leather, with broad\* soles and with buckle fastening.

No brushes, blacking, pipeclay, &c., for cleaning purposes should be permitted, each man should have a bit of soap and a towel, and be permitted to carry two yards of rag cloth for cleaning his rifle.

An officer should have 50lbs., and 20lbs. for cooking, total 70lbs. Staff Sergeants and Native Officers 10lbs., for cooking plus 35lbs. carried=45lbs.

In addition to this, which is what they should carry for their own comfort, each man should carry a tool of some sort. The proportion cannot, of course, be rightly determined till the nature of the country they are going to is known, because in a very jungly country a larger proportion of axes and other cutting tools are necessary, in a stony country a larger number of crowbars and picks, and in a level country with ordinary soft soil, more spades and *fowrahs*. To illustrate this, let us take Bhootan as representing the first, the North-Western Frontier Hills the second, and the plains of India, China, or Persia the third ; then the proportion should be as follows :

---

\* As this is the least any man can do with, this scale applies to Natives equally with Europeans, as well as to all branches of the service.

Out of every 200 men—

|                |        |     |     |
|----------------|--------|-----|-----|
| Kookrees       | all    | all | all |
| Fellingaxes... | ... 20 | 5   | 5   |
| Hand do. ...   | ... 20 | 5   | 5   |
| Spades ...     | ... 30 | 40  | 55  |
| Picks ...      | ... 25 | 40  | 30  |
| Crowbars ...   | ... 5  | 10  | 5   |

Any other tools necessary for entrenching or road making should be carried by Sappers or with the Engineer Park, and crowbars should be carried turn and turn about throughout the Company.

#### COOKING POTS.

With regard to cooking pots and eating things, however, advisable it may be to reconcile the shape of these things in use with Native and English Troops, it cannot be done, and, of course, as long as we enlist men whose religious prejudices or castè fancies forbid their eating together, we must not expect to see this very large item of a Native Soldiers' *impedimenta* reduced in any way.

To take then the English Soldier first, he requires one pint drinking cup for all purposes, holding one knife, one fork, one spoon, one small salt and pepper box. He also requires one large-sized tin plate, and cooking pots—

For each mess of 15 men or 20 men—

- 1 copper boiler, 6 gallons.
- 1 do. do. 3 do.
- 1 do. ladle, iron handle.
- 1 tea-pot.
- 6 *tawas*.
- 2 copper trays (*talees*).

These pots should be made to fit into each other, and the tea-pot into the three-gallon boiler, the *tawas* into that, and the *talees* over top and bottom. These are sufficient, and should not weigh more than 40 lbs. Four messes in one Company gives one mule load per Company, or say 3 lbs. per man for messing things.

And with reference to those castes of Native Troops who will cook together, such as Mussulmans and Sikhs, there is not the least necessity for their cooking equipment being more numerous or weighty; but, looking to the fact that they eat less meat, they might have one three-gallon boiler, four *talees* and eight *tawas*, with three smaller pots like *lotas*, four spoons per mess. As to the castes who do not cook together, there is nothing for it but to allow each man one *lota*, one *talee*, one *tawa*, one

spoon ; but there is no doubt that by adopting a uniform pattern, much may be done both to reduce the weight and also to afford easier and less bulky packing, so as not to exceed 3 lbs. per man.

#### RATIONS.

Inseparable with this question of cooking is that of rations, it is of course, just as advisable that there should be as nearly as possible one scale of rations as one description of cooking utensils ; and if we cannot carry this out entirely, it is still advisable to do so to as great an extent as possible. At present, when on service, rations are issued to Troops ; there are the following scales of rations, *viz.*, European Soldiers, Native fighting men, public followers, private followers, each of which not only differ in amount, but also in description of food.

Now, though they cannot all be quite assimilated, much can be done to get off this surely absurd anomaly. Taking it for granted that in any Force in the field there should be no superfluous mouths to feed, that every man does a fair day's work, and therefore earns a fair day's food, it seems something ridiculous to lay down one man shall get more or get less food than another. Suppose, then we take the English Soldiers' ration as standing alone, there seems no reason why all Natives with a force should not receive the same as follows :

#### SCALE OF RATIONS PROPOSED.

|                                | <i>English.</i> |     | <i>Natives.</i> |                |
|--------------------------------|-----------------|-----|-----------------|----------------|
|                                | lb.             | oz. | lb.             | oz.            |
| Flour                          | ...             | 1   | ...             | 1              |
| Rice                           | ...             | 1   | ...             | 4              |
| Salt                           | ...             | ... | ...             | $\frac{2}{3}$  |
| Ghee                           | ...             | ... | ...             | 2              |
| Turmeric                       | ...             | ... | ...             | $\frac{1}{2}$  |
| Sugar                          | ...             | ... | ...             | 2              |
| Meat                           | ...             | 1   | ...             | 8              |
| Tea                            | ...             | ... | ...             | $\frac{1}{2}$  |
| Preserved vegetables, or kokum | ...             | ... | ...             | $\frac{1}{2}$  |
| Total                          | ...             | 4   | ...             | $1\frac{3}{8}$ |

of which, however, only  $1-7\frac{3}{8}$  oz. and  $1-5\frac{1}{8}$  oz. have to be carried.

When Natives do not eat meat, or do not get it, they should get  $\frac{1}{2}$  lb. more flour and  $\frac{1}{2}$  lb. rice.

It is not likely that these rations would prove more than enough ; it is the safe side to over-feed men in hard work. But of course in case of necessity men can be put on short rations.

#### SERVANTS.

Inseparable again with the question of rations is that of establishments ; it is hard to say which is the greatest curse to an Army operating in a difficult country, too much baggage, or too many followers.

To begin, then, let no such thing as a lascar or tent-pitcher ever accompany a Force on any plea whatsoever, neither for Officers or men.

There should be no sweepers either, but only one puckaly bheestie, one hand ditto per 100 men, and one cook per mess.

This for the men of all arms, whether European or Native.

For horses, one grass-cutter to every three horses, no syces.

Officers, one servant each, one to each authorized horse.

For Office, Soldier Clerks only to be allowed.

No other followers to be permitted with Regiments or Staff Officers.

On occasion the cooks and bheesties can be left behind.

#### SICK CARRIAGE.

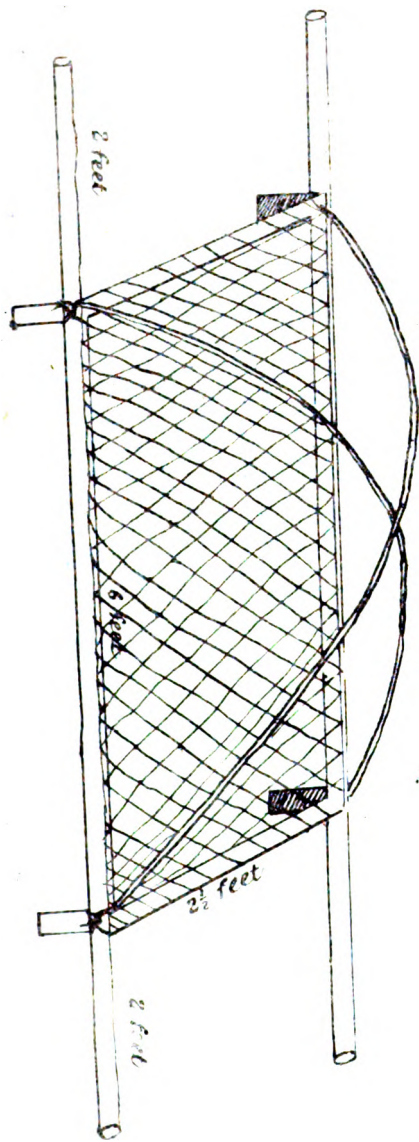
I now come to the question of sick carriage; and if, with reference to the general nature of the countries in which British Indian Armies have to operate, we allow once for all that no sort of ambulance is fit for the carriage of sick men, that animals are only fit to carry slight cases, and that men are required for serious ones, we shall reduce the question as to the best description of such carriage into very narrow grounds, and there does not seem to be any necessity for arguing these points, they are sufficiently self-evident to call for any proof in their favor.

Let us take then the cases of bad wounds and serious illness first: for these especially, when the patient will not bear moving the dooly is most undoubtedly the best, but the dooly as at present made is a very heavy, cumbersome litter, and hangs a great deal too low for use among mountains.

But it can be improved. A common light Native string charpoy, 6 feet long by  $2\frac{1}{2}$  broad, with the legs cut to within 6 inches of the ground, and the side poles made to fit into a loop which goes round the legs, and removeable at pleasure, furnishes us with all we require, *viz.* a light, simple, easily repaired litter. The best shelter from rain is the man's own water-proof sheet stretched over two canes crossed in the manner shown in the sketch, and shelter from the sun can as easily be improvised at the time by the use of the man's blanket. Any attempt to provide beforehand a more secure or permanent shelter only makes it more complicated and cumbersome. This could be carried by four men, and be used as a stretcher for taking wounded men off the field carried by two men. (*Vide Plate III.*)

For slight cases, *i. e.*, a little fever, diarrhœa, slight wounds, or sore feet, common saddles on mules, and double saddles for camels, answer all the requirements.

Taking into consideration that all sick men should be sent to the rear as fast as they become a nuisance from requiring carriage and the services of men to look after them who may be better employed, and also that Regiments have been thoroughly weeded of weakly men before-





hand, the scale in which these should be provided should be as follows, viz :—

|                      |                   |
|----------------------|-------------------|
| Litters, 4 per cent. | } Of whole force, |
| Other, 6 per cent.   |                   |

Each litter requires four men.

It must not be supposed that the following contrivances for carrying sick men are left out of the above consideration on any other account but their unfitness, viz., Cacolets, Kajawahs, Ambulances, Hammocks, Dandies, Swing Cots, &c., &c. I know of all and have condemned them on their own merits.

In addition to the practical experience I have had of the various methods of carrying wounded men, I visited and paid particular attention to a very large display of all the contrivances for this purpose, which were exhibited in the building set apart for the appliances of Military Hospitals at the Paris Exposition of 1867 ; yet though there were many which called forth the admiration of visitors by the completeness of their fittings, there was not one which would have stood the rough test of actual war.

#### DEPARTMENTAL ESTABLISHMENTS.

I will not presume here to lay down in detail the Establishments necessary for the Hospital, Commissariat, and Ordnance Departments on field service ; but if the principle that a Regiment should do every thing for itself is acted up to, and if these departments are assisted in absolutely necessary work by parties from Regiments, it is evident that very small establishments only can be necessary.

Firstly, with reference to Hospital Establishments, it would, of course, be most impolitic to curtail in any way that part of them which may be called the skilled portion, those which the Medical Officers may regard as absolutely necessary for the proper treatment of cases : but there is no doubt that a very little practice would enable the Soldiers themselves to assist to a great extent as nurses, watchers and dressers ; and if this is the case ; it is also preferable on the grounds of "*camaraderie*" and good feeling between men of the Regiment.

Large establishments for Commissariat purposes also do not appear to be necessary, for though here also it will not do to cut down the number of agents of superior intelligence and standing, the troops of coolies, lascars, &c., who always accompany an Indian Commissariat may well be dispensed with.

A plan of requiring every Regiment to have ten days' supply with them was followed with great advantage during the campaign in Abyssinia, and might be applied to other countries. It serves to do away with the number of men required for daily issues, saves accounts, and consequently accountants and renders Regiments more efficient and more ready to move at a moment's notice.



The system at present followed for the check of the issue of rations appears to be unnecessarily cumbersome and inducive of great waste of time, paper, and temper. If a Regiment or Detachment wants its food, the drawer has to go into an elaborate calculation based on the number of men, the description of rations, the number of days for which required, and the issuer has also to go through the same elaborate calculation in order to enable him to check it; and this is not all, if the ration were unvariable, matters would be simplified, but it is not so, sometimes there is no tea, at others no sugar or rum, or else the quantity of some particular item has to be increased or decreased, so that really each day's calculation has to be made out afresh.

What is the good of all this? Such elaboration of check and complication of account must defeat itself. No Commissariat Agent really can check each requisition, he is only supposed to; but if he did, the men would starve. When in addition there are five different sorts of rations for men and ten for animals, the practice becomes more than ludicrous, it resolves itself into a criminal waste of time.

At a race meeting in England, when a vast number of people have to be fed in a short space of time, the proprietors of the refreshment stall do not require indents, nor even relative payment in cash involving calculation and change, but they issue tickets at so much a head. Why then should there not be ration tickets colored according to the description of ration, white for Europeans, red for Natives, green for horses, &c., on presentation of which the whole or such part of ration as was authorised or procurable, should be issued. The idea is feasible, and by a little practice in a cantonment in peace might be made perfect for use in war.

Too much weighing also goes on for service, minute weighing of small quantities is vexatious and productive of very little saving after all. Articles being made up in packages of known quantity and issued bodily as much quantity would not in the long run hurt either the Government or the Soldier.

And with ordnance stores much may be done to lessen establishments without diminishing supervision. To begin with, all the ammunition required by Regiments or Batteries for immediate use should be under its own care, *viz.*, 140 rounds per man, thus doing away with the necessity of a single man other than the Soldier of the Regiment or Battery to look after it. And if at grand depôts working parties of Soldiers were used to store it, and, on the occasion of an issue, Detachments sent to remove the same, so much would not be said of the necessity for Troops of store lascars and tindals, &c.

It will be observed that, in treating of this subject of establishments with regard to all the above departments, no proposal is made to reduce the skilled supervision, but only the unskilled labor—labor which costs money, increases numbers, and, worst of all, on a campaign consumes food, when the work they do perform could be more satisfactorily and efficiently done by the Soldiers themselves.

## TRANSPORT TRAIN.

The organization of an efficient transport train for the carriage of supplies on a campaign is a subject which is now receiving more attention than heretofore, and rightly so; there is none more important, for, when a transport train breaks down from bad management or other cause, it does not merely mean so many animals galled, so many dead, but also shortness of provisions, insufficient ammunition, few medical comforts; it hints at sickness, disaster, and disorganisation, and it may even cause failure of operation.

The first thing then required is a clear well-considered organization, for though with the best organization there may be difficulty, still without it all the zeal and intelligence in the world is of little avail; and this organization must not be of that ultra description which by the multiplication of rules and forms organizes itself into inefficiency; it must be based on common sense, nurtured by common sense, and kept up by common sense.

Self-interest is after all one of the chiefest mainsprings of successful action, and as with men, so with Regiments, if it is clear that it would be for the interest of a Regiment provided with a transport to keep it in efficient order, it seems folly not so to provide it, for as without its transport a Regiment cannot advance to that fame and glory which the most prosaic of us look to, by giving a Regiment its own train to look after, we surely have as powerful a lever wherewith to ensure its hearty co-operation in its well being as we can well have.

And again though it is in most men's experience to have seen baggage animals carrying much larger loads than will be hereafter detailed as the maximum to be put on to them, it should be remembered that these occasions have been with the favorable concomitants of good roads, abundance of care and not too constant work—whereas on a campaign (and this is more especially the case among mountains) the animals seldom have good food, or much care bestowed on them, their work is constant and never remitting, and they frequently stand for hours together on a narrow path laden and without meat or drink. Therefore, though these loads may appear small, they are such as the experience of Field Service shows cannot be exceeded with impunity.

Taking all this into consideration, a cooly cannot be calculated on as carrying more than 70 lbs. (indeed this is a large estimate, for in Bhootan they seldom carried more than 60 lbs: yet as, if left to themselves, they frequently carry 90 and 100 lbs., it is probable that means might be found to induce them to take any load up to 70 lbs.); an average mule should not be called upon to carry more than 160 lbs., a camel than 320 lbs., a bullock than 130 lbs., a Maltese cart drawn by two mules than 1,000, or an elephant than 1,000 lbs.

This, however, is not meant to govern exceptional cases, for it may be necessary to load them to the last straw, or a long halt on good food

may have so far restored them as to make extra loads not only justifiable but advisable.

With regard to coolies it is better not to interfere with them, as to the method in which loads shall be carried, they are pretty sure to know a good deal more about it than any mere amateur. Therefore, whether they carry on the head or the shoulder, whether by brow band or the chest band, it is only necessary to see that they are provided with new and efficient gear.

For bullocks, it is probable the common Native pad is the best suited form of saddle; but if they are to be used much among mountains, it is also advisable to provide serviceable breast and breech bands as well as ropes to prevent loads from slipping off the pad, in ascending or descending a hill.

The question of the best pack saddle for mules or horses is one which, like that of the best saddle for Cavalry, or of gaiters for Infantry, is never ending, for no sooner does the experience of one campaign seem to decide it than that of the next upsets it and re-opens the whole question. Yet, lately, there has been a great deal of experience bearing on this point. Within the last eight years, we have been called on to use mules as pack animals in China, New Zealand, at Ambeyla, and in Bhootan and Abyssinia, and if there is a possibility of opinions founded on the experience of all these being refuted at some future period, we can but do our best.

The campaign in Abyssinia gave very excellent opportunities for considering this question, for here were tried the very latest English inventions, the Otago and MacMahon, against the pads in use from time immemorial in the Punjab, Persia, and Egypt, where practice extending over centuries may be supposed to have given these people some experience of the matter.

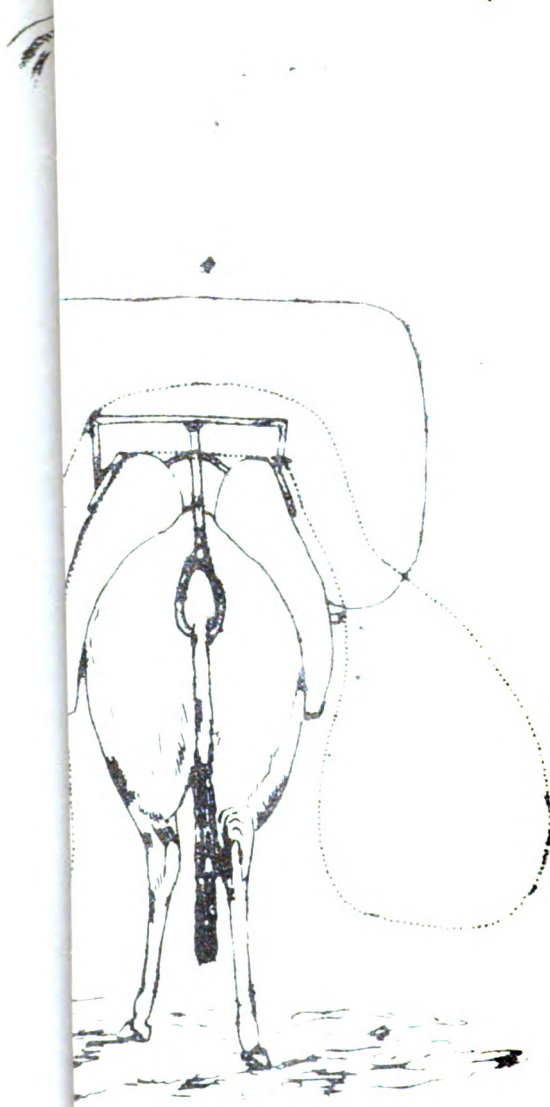
Even at the expense of spinning out these already too long notes it will be well if we first consider what should be the chief points in a pack saddle—

*1st.*—It should not gall; and, to secure this point, the padding must be sufficient, and it must not press on those parts most likely to gail, namely, the shoulder, withers, and backbone.

*2nd.*—It should be light, because every lb., added to its weight, takes one off the load we can put on the animal, and with this view there should not be too much iron or wood, and nothing superfluous should be permitted.

*3rd.*—It should be simple and easily repaired, because a saddle that is merely good at the commencement of a campaign, and cannot be easily repaired during its continuance, is evidently unfit.

The Otago saddle is better in theory than in practice; it is light





it appears simple ; and it seems to be well raised off the withers ; but it must be made of several different sizes to fit every sized animal,—as if it is too large, it slips down to the withers ; if it is too small, it presses on the shoulders ; and though the beautiful straps with which it is provided seem to an Englishman the perfection of fitness and simplicity, yet to the untutored muleteer accustomed to nothing but rope, they are the acme of complication.

The principle of the MacMahon saddle is the the same as the Otago, but it is extremely heavy, requires careful fitting, and has too complicated straps.

The Hungarian saddle is also the same principle, and has the advantage of being much lighter and furnished with more simple fastenings, but it is dependent on a carefully folded blanket, which is evidently too much to expect from muleteers on dark or cold morning marches.

The Punjab pad is simple and light and affords very fair protection to the back, this being provided for by two rolls of numda which rest on either side of the backbone.

The Persian pad is made on the same principle, it is larger and more clumsy, yet has the advantage of a loin cover.

The reason why the Otago and MacMahon saddles require careful fitting, is because the frame-work is too rigid, and can only adapt itself to the particular animal for which it was prepared, and the reason why, with a number of mules of all sizes, the Punjab pad in Abyssinia galled fewer than any other, was because it was not rigid enough and adapted itself more readily to different conditions of size, &c. ; and again the reason why the Otago did not gall more, was owing to the load being kept so well off the spine by this very rigid frame-work, while the reason why the pad did gall so many as it did, was because it had no tree, which would keep the load from pressing on the spine.

Now, bearing this in mind, and remembering what we have said above on this subject, I will endeavour to construct a saddle which shall be without the disadvantages detailed in the foregoing paragraphs.

In Plate IV., figure 1, is shewn in red ink the outlines of the bones of a mule, and it is evident the points to be more particularly guarded against galls is G, the spinal bones, and H the shoulder blade. In figure 2 an attempt is made to show what a section cut right through a mule's back would be. Here, G being the point to protect, it will be seen that the reason why a mule gets more galled there than elsewhere, is because as the pad formed by the flesh (shaded in red ink J) falls away, the pad of the saddle (shaded in black D) is not sufficient to make up the deficiency, the bones protrude, are pressed on by the saddle insufficiently padded, and the consequence is, a gall.

It is therefore evident that any saddle with only a fixed amount of padding cannot be fit for use equally for animals in and out of condition.

A saddle to be perfect must have, therefore, some contrivance to enable the gap which is caused by hard work and short food in the former well rounded outline of the back of a well conditioned mule to be filled up.

A glance at figure 3 will show how this is proposed to be secured, as well as the general nature of the saddle suggested.

A A A is an iron frame-work fastened to a wooden tree B B which is made in the shape of the tree of a hunting saddle, the advantage of this shape being that it does not press so closely on the back and gives freer play to the shoulder.

C C is a pad of layers of felt to the thickness of an ordinary Punjab pad, it being made originally thicker at D. and each saddle being supplied with one numda to go under all, and three strips of felt to put in at D, so as to render the padding at this point more complete, when the animal has fallen off in condition.

At M M the tree fits into pockets in the pad, but these can be separated and the pad alone left on the animal.

N is the loin carpet taken from the Persian pad, and together with the pad divested of its tree forms of itself a covering of very great warmth for the animal at night.

1 and 2 are straps attached to the centre of the iron frame-work before and behind to prevent in a great measure that swaying of the load which is always so evidently one great cause of galling.

These straps have only one buckle each.

Nos. 3 and 6 are breast and breech straps of soft broad leather to prevent the saddle slipping back and forwards.

And 4 and 5 are girths of the usual material fastened to the pad only to keep it in its place.

It is not supposed that even this saddle, which is made on the most approved principles, would prevent galls unless proper supervision is exercised to see that the straps, &c., are properly adjusted and the load properly fastened on. For no saddle can prevent a badly placed load from causing a gall. In Abyssinia, there was abundant proof of this; in figure 4 the red lines show a load as the muleteers delighted to place it, dangling within a foot of the ground, swaying backwards and forwards, and catching every projecting stone or branch in the road. The load shown in black ink is the way a load should be put on, *viz.*, high compact and secure.

Though there are so many opportunities in India of gaining experience as to the best description of pad or saddle for camels and elephants little or none has been recorded. Therefore till we are in position to speak more from experience, it is wiser to trust to the attendants who have been accustomed to these animals all their lives. Yet there is no



doubt elephants and camels do gall considerably, and as the osseous structure of these animals is similar, it is evident that unless the saddles provided are made on the same principle as that recommended for mules or horses, they must be faulty and capable of improvement.

When carts are used, as may frequently be the case with great advantage, no effort should be spared to have the Maltese cart, it is just as superior in its way to all country carts as the railway is to the old mail coach, and to use ponderous, awkward hackeries, when light and suitable Maltese carts can be provided, would seem a decided blunder.

There is one more point in connection with transport to be considered, *viz.*, the number of attendants necessary for each animal. The scale should be as follows :—

|                                      |     |   |           |
|--------------------------------------|-----|---|-----------|
| Bullocks                             | ... | 1 | man to 5. |
| Mules or ponies                      | ... | 1 | " " 3.    |
| Camels                               | ... | 1 | " " 3.    |
| Elephants                            | ... | 1 | " " each. |
| 2 Mules or 2 Bullocks, or pony Carts | ... | 1 | " " "     |

These should be organised under regimental arrangements.

I do not pretend that this finishes the subject of transport. Such a question cannot be summarily treated in a short paper like the foregoing, it is one which is worthy of the most careful enquiry. The formation of a nucleus in time of peace, the field organization in war, the care of the animals, the sources of supply, &c., these are all points which would have to be treated of, and regarding which there are many able opinions which would have to be reconciled.

C. M. MACGREGOR, *Lieut.-Col.*,

*Bengal Staff Corps.*



## Short Notes on Professional Subjects.

### I. Scheme to promote Recruiting for the Regular Army.

By MAJOR T. LYNDEN BELL.

1. The term of 21 years' service, which at present entitles a Soldier to pension for life, to be divided into three parts, *viz.* seven years five years, and nine years.

2. Soldiers to enlist in the first instance for seven years, on completing which, if of good character and effective, to be permitted to re-engage for five years, or to enter Reserve.

3. After 12 years the same plan to be observed ; but if approved by the Commanding Officer to be permitted on completing 10 years, (say) to re-engage for such a period as may be necessary to complete a total of 21 years' service.

4. That Soldiers of good character, discharged at their own request, on completing their first or second engagements, shall (provided they enter the Reserve, and serve in it for a term the duration of which to be determined by authority) have a right to registry for deferred pension at 4*d.* and 6*d.* a day, respectively, on attaining the age of fifty.

5. That "The National Guard" or "The Home Guard" shall be the terms applied to Reserve and Local Forces, instead of "*Militia*" (which is a most unhappy name for an armed body) and other organizations.

Thus, the Royal Cumberland Militia (say) would be termed—The (number) Battalion of the National (or Home) Guard.

6. That "rations," and everything required to complete the food of the soldier, shall be issued free of charge to every Non-Commissioned Officer and Private serving under the Standard (but that no allowance in lieu shall be given when a man proceeds on furlough). That hospital stoppages shall cease. That such charges as hair-cutting, washing, &c. &c., shall be otherwise provided for than at the expense of the men.

7. That to keep up the supply of regimental necessities required by ordinary wear and tear, an allowance of one penny per diem shall be allotted for each Non-Commissioned Officer and Soldier. This sum to be in the hands of the Captain of the Company, and the Soldier to acknowledge his debit or credit in his monthly accounts at the conclusion of each military year, any sum to the man's credit beyond 5 shillings to be handed over to him.

*Note.*—Articles of necessities made away with or lost by neglect to be made good—by stoppages of pay and allowances, by sentence of Court Martial, or by consent, as at present.

8. That the net pay of Private Soldiers of Infantry shall be fixed

at the clear sum of (6d.) per day at Home and in the Colonies, and at (9d.) in India.

*Note.*—These rates can be modified if considered too high.

9. That the net pay of Non-Commissioned Officers (and Soldiers of other Arms) shall be as much in excess of the rates noted in paragraph 7 as they are now higher than the Private's nominal pay.

10. Non-Commissioned Officers and Soldiers admitted to hospital through disease or disability caused by their own vice, or intemperance, or through having wilfully maimed themselves, to draw no net pay while thus non-effective.

11. That, both for simplicity in accounts, and so that careful men may have a better opportunity of investing what they do not require to spend, in the Savings Bank, all Non-Commissioned Officers and men shall be paid weekly.

12. That after having become thoroughly acquainted with his military duties, and having served in the ranks at one inspection by a General Officer (or being accounted fit to do so if sick or otherwise employed), each Non-Commissioned Officer and Private, in his first period of service, be given credit for one penny for each day of "good service," as shown by his record of service dating from above-mentioned inspection, the said money to be termed "reserved pay," and to be paid to him after discharge at "his intended place of residence."

13. Reserve pay at the same rate to be credited to all Non-Commissioned Officers and men in their second or third periods of service, with the option of drawing half the amount of arrears due at the time of completing their former engagements.

14. That the conditions of forfeiture and restoration of reserved pay shall be identical with those affecting good service towards pension.

15. That no Non-Commissioned Officer or Soldier shall be permitted to marry during his first period of service.

16. That Non-Commissioned Officers and Privates may be permitted to marry during their second and third periods of service in such numbers per cent. of each rank as, upon due deliberation, may by authority be considered possible without detriment to the service.

17. That lodging, fuel, light, and a family allowance (similar to that granted in India) or rations in kind, shall be granted to each Soldier's family, and that simple articles of furniture, also bedding, be placed in each married quarter; and further that conveyance at the public expense shall be granted to them from one station to another.

18. That all Private soldiers who have completed 21 years' good service shall have a pension of one shilling a day for life, and in addition one penny per day for each good conduct badge held during the last two years of their service.

19. That Non-Commissioned Officers at the time of discharge who have held rank as such for seven years during their total of 21 years' service shall have a pension equal to the full pay of that rank which has been longest held by them during their seven or more years of Non-Commissioned Officer's service, and provided it is not of a rank higher than that held on discharge.

20. That if discharged with a Corporal's pension they shall have in addition one penny per day for each good conduct badge, which they would have been possessed of for two years prior to discharge had they not been promoted to a higher rank.

*Note*—The existing good conduct warrant to remain in force excepting in its operation as to pension,—*vide* paragraphs 19, 20 and 21.

21. That pensions for wounds or disability at any period of service shall continue to be regulated by the liberal provisions of the Royal Warrant of July 1864.

22. That every Non-Commissioned Officer and Soldier in his first period of service shall attend the Regimental School until he has learnt to read and write, and until he has a knowledge of the rudiments of Arithmetic.

23. That every Non-Commissioned Officer and Soldier who having completed seven or more years' good service is discharged with a good character, and is in possession of an Educational Certificate from the Regimental School (the qualifications for which to be determined by authority), shall have, so long as he shall not be convicted of any serious breach of the laws, and so long as he shall support himself without assistance from his Parish, a vote for the Parliamentary representation of his Electoral Division.

T. LYNDEN BELL, *Major,*

*1st Battalion, 6th Royal Regiment.*

RAWUL PINDEE; }

*The 11th March 1871.* }



## II. Notes on Non-Commissioned Officers' Schools in Prussia.

BY CAPTAIN E. F. CHAPMAN, R. A.

---

"The introduction of a short service has given rise to grave doubts regarding the future efficiency of the Non-Commissioned Officers of the Army.

"While Military reformers are engaged in considering the possibility of transferring our Soldiers rapidly from the regular Forces to the reserve, the importance of providing, simultaneously with this change in our system, a supply of Non-Commissioned Officers of superior training and education appears to be overlooked.

"I venture to submit, for consideration, the following notes made during a visit to the Continent in January 1869:

"There are at present three Military schools in Prussia which, during last year, supplied about 350 trained Non-Commissioned Officers to the Infantry of the Army.

One at Potsdam, established in 1824.

One at Julich, established in 1859.

One at Bieberich, established in 1867.

"So highly valued are the qualifications of the young men supplied by these schools, that it is found impossible to meet the demands made upon them, and already it is in contemplation to start two more schools at Weisenfeldts and Marianswerder for the education of Non-Commissioned Officers.

"The first school established, that of Potsdam, was intended to furnish Non-Commissioned Officers to the Guard only, as was that at Julich when first opened, the students were originally sons and orphans of Soldiers. The schools at Julich and Bieberich are now open to all boys from 16 to 20 who can produce the permission of their parents to enter, and obtain a certificate of good conduct from the Magistrate of the District in which they live; candidates are required to be able to read and write a little, and to know something of elementary arithmetic; they remain for two years at the school, when, if they can pass the required standard of examination, they are sent as Non-Commissioned Officers to the different Infantry Regiments of the service. In lieu of the three years' regular service demanded from the Prussian Soldier, they are obliged to serve for six years, and if willing to remain nine years in the service, they are entitled to be recommended for good positions in the Civil branches of Government employ.

"Owing to special qualifications required from Non-Commissioned Officers of Artillery and Cavalry, a different system prevails for these branches of the service: they have special schools at Cassel and Hanover,

where Soldiers selected from the ranks after one year's service to become Non-Commissioned Officers, are educated and returned to their Regiments.

"The Prussian School at Bieberich for Non-Commissioned Officers is divided into four Companies averaging 125 men. The number of Officers for the above is 19—

1 Commandant (Captain with rank of Major).

4 Commanders of companies (usually Lieutenants).

12 Officer Instructors (three per Company).

1 Adjutant.

1 Instructor in Gymnastics.

"The Officer Instructors are appointed by the War Minister in regular course of duty, being relieved every three years; the Commanders of Companies are retained longer if it is thought advisable. The position of Officer Instructor is a popular one, the allowances are liberal and it is considered a compliment to be chosen for the post. In proof of this, I may mention that the larger proportion of the Officers are from the Guard, to which the schools themselves are attached.

"For the general duties of the school and to assist in giving instruction, Non-Commissioned Officers are supplied by Regiments throughout the Army; they are evidently of a superior stamp. Regiments are induced to part with good Non-Commissioned Officers for this purpose by the fact that in exchange for one Non-Commissioned Officer Instructor, they are entitled to receive three young Non-Commissioned Officers from the school. There would appear to be no difficulty in procuring students, or instructors, so popular are these institutions.

"No. 3 Company, which I had an opportunity of inspecting during the hours of study, was divided into three classes, each containing about 40 students, the most advanced of whom were undergoing instruction in Military History and Geography, from Lieutenant——, at the time of my visit; questions on the Campaign of 1813 and on that of Waterloo were answered with correctness and quickness; they were in all cases confined to historical facts and did not bear on the principles of the art of war.

"Each student was provided with a capital set of sheet maps (lithographed in the institution), the details of which he was called upon to fill in himself, while the geographical questions put by the instructor directed his attention to important points. It is worthy of notice that the instruction in geography was chiefly that of the Military divisions of Germany, the German frontier roads, &c.

"The second class was engaged with the elementary part of Military drawing, preparatory to making eye sketches of the neighbouring country, when the season advanced. I thought the students intelligent



and saw some sketches made during the summer by a more advanced class which were very creditable and sufficiently accurate for Military purposes.

" The third class, under a Non-Commissioned Officer Instructor, were employed in reading, writing, and recitation.

" The studies continued from 9 to 11-30 when I saw the Company at drill for half an hour ; I then visited the gymnasium where the attention given to the bayonet exercise seemed to prove that the Prussians had not adopted the opinion that breech-loading arms are likely to put an end to the style of fighting most popular with the British Soldier.

" The following weekly programme for the most advanced class gives some idea of the education imparted and of the hours apportioned to study :

| Hours. | Monday.                                              | Tuesday.                       | Wednesday.                                      | Thursday.                     | Friday.                      | Saturday.                     |
|--------|------------------------------------------------------|--------------------------------|-------------------------------------------------|-------------------------------|------------------------------|-------------------------------|
| 8-9    | Marching out and<br>Instruction in<br>Field service. | Manual and<br>Platoon.         | Practical Instru-<br>ctions in Field<br>duties. | Gymnastics.                   | Gymnastics.                  | Reading.                      |
| 9-10   |                                                      | Writing.                       |                                                 | Arithmetic.                   | Drill.                       | Writing.                      |
| 10-11  |                                                      | Reading.                       |                                                 | Official Cor-<br>respondence. | Ditto.                       | Theoretical Instruc-<br>tion. |
| 11-12  |                                                      | Geography<br>and His-<br>tory. |                                                 | Writing.                      | Ditto.                       | Gymnastics.                   |
| 2-3    | Arithmetic.                                          | Drill.                         | Cleaning Quarters.                              | Drill.                        | History and<br>Geography.    | Cleaning Quarters.            |
| 3-4    | Official Cor-<br>respondence.                        | Ditto.                         | Drill.                                          | Ditto.                        | Religious In-<br>structions. |                               |
| 5-6    | Tailoring.                                           | Singing.                       | Choir Singing.                                  | Cleaning<br>Arms.             | Preparation<br>of Lessons.   | Choir.                        |
|        | Preparation<br>Study.                                | Cleaning<br>Arms, &c.          | Theoretical in-<br>struction                    | Preparation.<br>of Lessons.   | Singing.                     | Cleaning Arms, &c.            |

" For the supply of clothing, boots, &c., the establishment is made independent by capital workshops, the work is performed by non-combatants of the Military District in which the School is situated.

" I visited the barracks, kitchen, &c., store-rooms. Two Companies were route-marching on the morning of my visit, and one Company was employed in drill and gymnastics.

" An impression of hard-work and interest on the part of Officers and Students could not fail to be received ; the same attention to details could not be expected as is demanded in a purely Military life ; but if something of smartness was sacrificed, there was an air of comfort in the Prussian Non-Commissioned Officers' School barrack particularly pleasant.

“Special qualifications are required in the Officers and Non-Commissioned Officers of an Army receiving yearly so large a number of recruits as the Prussian Army ; the system demands that all should be able to impart whatever knowledge of the Military art they possess with facility. It is from the Officer that the Non-Commissioned Officer receives all the training he possesses ; and the education of the Non-Commissioned Officers and Soldiers has an interest for each individual Officer which our system fails to impart, while the benefit to the Officer himself in demanding self-cultivation is very great. It is recognized that one-half of the Soldiers in the Prussian Army can read and write, while the fact that a Non-Commissioned Officer is rarely deprived of his rank as compared with the numerous Courts Martial held in our service is an evidence of the high character and capabilities of the men employed in the Non-Commissioned ranks in Prussia. In the Prussian Military School a sound practical education is bestowed, at a comparatively small expense, upon a body of men, whose services are of great importance to the State, during their Military career, at the conclusion of which they possess special qualification for further usefulness in responsible positions, either as Civilians or Soldiers.”

E. F. CHAPMAN, *Captain,*  
*Royal Artillery.*

## CORRESPONDENCE.

## I.

To

THE COUNCIL OF THE  
UNITED SERVICE INSTITUTION OF INDIA.

GENTLEMEN,

I WISH to address a few words to you on the subject of the advisability of affording Officers of the Army in India greater facilities for attending the course of instruction at the Royal Military College, Sandhurst.

I am not prepared to state explicitly what I would recommend to this end, but I am speaking the feelings of great number of Officers of the Indian Army when I say I do not think the present arrangements are adequate.

As the matter stands at present, the Officers of the Home Army have an advantage over their comrades of the Indian Army. The former can and do attend the College, and are consequently more able to make themselves efficient than the latter, especially, too, as in India there are not even opportunities of private study.

It is such a well recognised fact now that the education of Staff Officers is absolutely necessary to the success of an Army in the Field, that any arguments I may urge in favor of my views would be but a recapitulation of those which are in every one's mouth; and, therefore taking it for granted that it is necessary, it surely cannot be supposed that it can be dispensed with in India any more than elsewhere.

I am quite opposed to any idea of a Military College being established out here; to my mind the objections to it are—*1st*, unnecessary expense; *2nd*, the danger of an Indian College Certificate not carrying with it the same weight as one of the Sandhurst College; *3rd*, the very great objection that exists to further disconnecting Officers serving Her Majesty at Home and in India. I think, therefore, what I should propose would be that Officers should be required to pass a preliminary examination or undergo a course of six months at Roorkee, and then be sent Home, their passage being paid and being allowed English pay while there; and the Indian Government paying its share of the College expenses. If it was considered an honor to be permitted to go, and none but Officers of proved zeal and ability were sent, the result to Indian Officers no less than to the Indian Government, would be enormous. The number of Officers now permitted to join from the Home Army is . I would, therefore, suggest that at least Officers from the Indian Army be permitted to join annually. Perhaps, the Council of the Institution may be able so far to improve on the above as to render it acceptable to the Government. I am sure their efforts would be appreciated by their brother Officers of the Indian Army.

Yours obediently,  
C. M. MACGREGOR, *Lieut. Colonel,*  
*Bengal Staff Corps.*

## II.

GENTLEMEN,

ONE can scarcely open a file of General Orders without noticing the number of Officers who are granted leave during the summer season ; of this number, the majority no doubt seek the rest and pleasure afforded by the many hill stations ; others, however, prefer wandering through the interior, gun or rod in hand, in search of game or scenery, and these, in the course of their rambles, acquire much information, and take notes of many facts and circumstances both novel and interesting.

Some few on their return have published the result of their travels, but it is not to be expected that all would do so ; the expense of publication, a natural diffidence to appear before a criticising public, and, in many, a mistrust of their abilities, tend to prevent it. Yet, does it not seem a matter of regret that much valuable information should be buried in the forgotten note books of travellers, rather than brought to light to add to the store of knowledge we already possess regarding the country, or to be of use to the Government in the event of military operations taking place, when the smallest item of information has its value.

Lately, on reading an essay on the organisation of the Prussian army, I remarked that a system had been introduced, and found to succeed, of encouraging Officers to acquire information of all kinds regarding the countries they visited when on leave, more particularly of those adjacent to Germany, and embodying all so required in a report for the information of the War Department ; rewards and indulgences being given to those who displayed the greater skill in the acquisition of intelligence:

Could not something of a similar nature be done in India ? I offer as a suggestion that Officers be requested on their return from leave to submit a report to head-quarters compiled from their journals, noting all prominent facts that may have come under their observation, and enlarging on those that they may have found deserving of closer attention and study. The inducement to take careful notes and compile a good report, being, in the case of Officers of the British service, an additional grant of leave during the next season, and to Officers of the Indian service a restoration of the service forfeited during the leave ; the amount of leave to be granted, or service restored, depending on the excellence of the reports.

I think there can be little doubt but that good would come from this measure : so varied are the talents and inclination of the Officers of the army, that there is scarcely a subject, professional, scientific, or general which would not be touched upon and in which something hitherto unknown would not be brought to public notice ; an impulse and a direction would be given to an Officer's studies ; habits of reflection and observation would be encouraged : a greater interest taken in the country

and its inhabitants; and no small amount of practice would be gained in the preparation of creditable reports.

My letter, already longer than it should be, must not be concluded without containing one fact to support its reasoning. Ranikhet, already poetically described as the Queen of Hill Stations and the dangerous rival of Simla, has been recently purchased from a late brother Officer of mine for a considerable sum of money, and though known to hundreds of Officers who had encamped under its *cheer* pines, or shot over its undulating slopes, it was left to a retired Subaltern to select for his tea estate the site of the future largest Hill Station in India, and to purchase it almost for a trifle. Now, had this hill been reported upon, as it would have been under the system I have suggested, by some of the many wanderers who crossed it in their rambles, the attention of the military authorities would have been forcibly directed to it, its great natural advantages for a sanitarium would have been appreciated, and a saving effected in the military estimates of, at least, three lakhs of Rupees.

I remain,

S I R,

Very faithfully yours,

ARTHUR CROOKSHANK, *Captain,*  
*32nd Pioneers.*

S I M L A ;

*The 30th April 1871.*

}



## ORIGINAL PAPERS.

## I.

**On the Officering of Native Infantry, together with a proposed plan for re-establishing a Regimental Organization.**

IN addition to the grave objections to the Staff Corps organization as affecting the finances of the State, it is generally considered that the present system of Officering the Native Army, from it, is very defective, for the following reasons :—

There are not enough Officers, particularly in the grades of Captain and Lieutenant with Regiments, either to lead the men on service, or to look after them, properly, in quarters.

The changes are necessarily so great, and so constant, that it is impossible for the Officers and men to know each other, as they should.

The present system is distasteful to the majority of the Officers. It does not admit of that proper *esprit-de-corps* which is so essential to the well-being of a Regiment and an Army. There are too few Officers to admit of comfortable and economical institutions, such as Mess, Book Club, Band, &c., being established ; all of which, when properly conducted, add so much to the comfort and respectability of a Corps.

Under the present system Officers do not feel certain of regularly succeeding to the higher appointments in Regiments, which the organization alone should secure to deserving Regimental Officers as their undoubted right ; many of the older Officers are also heavy losers for want of a Regimental purchase or bonus fund which cannot be established.

The advocates of the present system, if any now remain, pointed to the irregular system of the old army, which was certainly good, but they overlooked or forgot, the great difference that really exists between the two systems ; under the old irregular system the European Officers were, every one of them, *selected from a large and experienced body*, whereas such is not, and never can be, the case under the present system. These selected Officers also remained under a Regimental organization, from which they reaped any benefit that was available in quick promotion from purchase, or in retiring with a bonus, and at times they often rejoined to command.

The present Staff Corps system of promoting every Officer after so many years' service, is by no means satisfactory to many of the best Officers in the service, who have been heavily superseded ; Officers who by service in the field, good luck, or purchase, have gained quick promotion, and any system that puts a stop to such occasional quick promotion is certainly not advantageous either to the army or the State.

The Native Officers of the old Irregulars were also considered a superior class of men to the ordinary Native Officer of the present day, but under any system of appointment, or promotion, Native Officers will not look to the discipline, instruction and interior economy of a Regiment as these important duties should be looked to, as they can only be attended to, by a set of contented and efficient European Officers.

Under the present system the majority of the European Officers are discontented, and there are not enough of them to secure proper efficiency; no adequate number of young Officers are undergoing training, so that, practically, the present Staff Corps system is totally unsuited to the well-being of the service.

Were the Government to establish a Regimental Organization on some such plan as the following, it is believed that it would be found to answer well, not only for the army, but also for the future financial prospects of the State.

Each Regiment of Native Infantry, of the present strength in Native Officers, Non-Commissioned Officers and Men, to have a complement of European Officers, as follows :—

|                                   |                   |
|-----------------------------------|-------------------|
| 1 Lieut. Colonel (Commandant)     | 1 Adjutant        |
| 2 Majors (Wing Officers).         | 1 Quartermaster   |
| 4 Captains } to command companies | 1 Medical Officer |
| 4 Subalterns } and not be mounted | TOTAL..... 14     |

The Officers of two Regiments, as 1st and 2nd Battalions, to be enrolled, according to dates of commissions, in one list, on which only they would get promotion as vacancies occurred, by deaths, transfer, or retirement.

Old, or full batta, rates of Regimental Pay to be reverted to, and staff salaries allowed as follows :—

|                 |                   |                   |               |
|-----------------|-------------------|-------------------|---------------|
| Commandant..... | Rs. 400.          | Subalterns        | Rs. 100 each. |
| Majors          | ..... „ 200 each. | Adjutant .....    | „ 200         |
| Captains        | ... „ 150 each.   | Quartermaster ... | „ 150         |

Mounted Officers to draw the usual horse allowance in addition.

The present allowance for repairs of arms, and for writing, to be divided between the Captains, who under the Majors, would be responsible for the arms, clothing, books &c., &c.,

*Volunteers* for the new Regimental organization to be called for and restricted to the following classes of Officers, viz :—

1. All Officers whether Staff Corps, or General List, now serving with, or on leave from, Infantry Regiments.
2. All unemployed Infantry Officers, whatsoever, below the rank of Colonel.



3. Officers of less than three years' service, belonging to any of Her Majesty's Line Regiments now serving in India.

Officers Volunteering to join the new organization to give up the Staff Corps, and all claim to promotion, retiring pension, and Colonel's allowances, under its rules, and to revert to the old retiring pension rules of 1796 and 1835-7.

A fixed number of Colonel's allowances, one for each Corps of two Battalions, or for every twenty-six combatant Officers, to be established for the new organization. This List to be completed, in the first instance, by appointing to it the senior Colonels of the new Regiments, on such dates as those Officers would have become entitled to this allowance had they remained in the Staff Corps; and thereafter to be kept complete, as vacancies occur in it, by the appointment of the seniors from a general list of Colonels belonging to the new organization.

Such Volunteers from the Unemployed List as His Excellency the Commander-in-Chief may not consider fit to hold appointments in the new Regiments, to be however posted to Regiments, as Supernumerary of their rank.

This arrangement not to interfere with the future promotion of such Officers when their turn may come on the Regimental list, or with the other Officers below them, who will be promoted as if there was no Supernumerary.

Supernumerary Officers to remain as such, if His Excellency the Commander-in-Chief sees fit, in any advanced rank they may obtain, up to the rank of Colonel, when, if not fit for command, they would revert to General duty, or be permitted to reside where they liked, on unemployed pay.

Supernumerary Officers to succeed to Colonel's allowances, under the Staff Corps rules.

It is not anticipated that more than a dozen of such supernumerary Officers of the Bengal Army, would join the new organization, on the terms here held out to them.

Officers on Civil or detached Employ, or serving in Departments, or Appointments, except such as can *now* be held *without* joining the Staff Corps, to be ineligible for Regimental appointments, under the new organization.

Regimental Officers hereafter accepting appointments, that cannot now be held without joining the Staff Corps, to join the Staff Corps, and to cause a permanent vacancy and corresponding promotion in the Regiment they leave.

All Regimental appointments vacated, either permanently or temporarily, to be filled up in the Regiment, and except in the case of an Officer absent on *privilege* leave, the Officer doing the duty to receive the full salary of the appointment.

Regimental Officers to be allowed leave, with retention of appointments, in, or out of, India. When on leave in India to be allowed full Regimental pay. When on leave out of India, to be allowed two-thirds only of Regimental pay.

There can be no better school than Her Majesty's Line Regiments, for the first two years' training of a young Officer intended for the Native Army, but he should not be allowed to remain longer than two years with a Line Regiment, nor should he be attached to it except as a Cadet for the Indian Army, being gazetted with the temporary rank of Ensign. After two years' duty with a Line Regiment, he should be posted to a Native Regiment and gazetted as a Lieutenant, but he should not get any *appointment* or be allowed any staff pay, until he passes in the languages.

By the introduction of such an organization, the Staff Corps, with its system of promoting superfluous Field Officers would be reduced at once to ordinary limits. It would still be retained for a proper purpose, without in any way interfering with the efficiency of the Army, which would also still supply its quota of the General, Divisional, Brigade and Personal Staff.

Such a Regimental organization should be applied to the whole Native army of India, including the Punjab frontier, and all contingent forces.

The Indian Army should be recruited for, and generally maintained in five grand divisions, corresponding to the several Governments, as follows :—

1st, or Northern, "*The Punjab.*" 2nd, or Central, "*The N. W Provinces.*" 3rd, or Southern, "*Madras.*" 4th, or Western, "*Bombay.*" 5th, or Eastern, "*Bengal.*" Each Grand Division to be commanded by a Lieutenant General under the one Commander-in-Chief in India. The men to be enlisted for General Service, and employed on such whenever required

G. HUNTER THOMPSON, LIEUT. COL.  
*Commanding 19th Regt. P. N. I.*

## II.

**On the Constitution, Equipment, Pay, &c., of the Bengal Native Infantry, with suggestions for reform,**

THE Bengal Native Infantry is at present composed of nearly every class and caste of natives from Peshawur to Assam. It is true that the present recruiting regulations prohibit the entertainment of the inferior classes, still many of the regiments require a deal of weeding, and the army would be a far more serviceable one, were its ranks confined to the following classes, *viz.* Puthans, Sikhs, Punjabee Mussulmen, Ghoorkas, and Rajpoots.

There should be a certain number of regiments of each class, in proportion to the numbers of each class, each regiment to consist of eight companies of the following strength, *viz.* 1 Subadar, 1 Jemadar, 5 Havildars, 8 Naicks, 2 Buglers or Drummers, 2 Musicians, 80 Sepoys. Total of all ranks, 792.

Class regiments would give less trouble, and be found to answer better in many ways than the present system of mixing different classes in each regiment.

At present there is often great difficulty in regulating promotion to the Native Commissioned and Non-Commissioned grades, so as to maintain a due proportion of each class in each grade.

It is also admitted by most thinking and experienced officers, that class regiments are very advisable on political grounds. Our present system tends very strongly to blend the national feelings and prejudices of the different races or classes, which from a military point of view is certainly not to our advantage.

As regards the Native Officers, in order to obtain really good and efficient men, one half of them should be selected from the ranks, and promoted without any reference to standing, or length of service; and the other half should, if possible, enter as cadets from among the sons of influential and respectable zemindars. If these latter were not well reported on after a year of probation, during which time they would simply be learning their drill and duty, they should be struck off and sent back to their homes,

At sickly stations, or where the duties are very heavy, the present strength of regiments, particularly in Naicks and Sepoys, is not quite sufficient to secure the duty being properly performed.

Every regiment should be allowed a band and band allowance.

Breech loading arms with corresponding accoutrements should be supplied to the Native Infantry. The pouch and ball bag, for the old musket are not suitable to the breech loading, or Enfield ammunition.

With slight changes, so as to secure the proper "Zouave" pattern

tunic, knickerbockers and gaiters, the present dress of the Native Infantry would be both appropriate and picturesque. Red tunic, blue serge knickerbockers and brown leather gaiters for winter. "Khakee" coloured drill articles of exactly the same patterns as the winter clothing for summer. Short ancle, country made, brown leather boots to be always worn. "Pugree" of the same colour as facings. The great coat should be a short one, reaching only to the knee, of the "Inverness Cape" or "Raglan" pattern, made of good country blanket. Each man should be supplied with a loose "khakee" jumper made of drill to be worn over the red tunic when on winter service.

The Government should supply the men with all the ordinary articles of winter clothing, *viz.* great coat, once every five years; tunic, serge knickerbockers, and leather gaiters, bi-ennially; boots yearly,

The uniform of all the regiments should be of exactly the same colours and patterns, numbers, and facings, being the only distinguishing marks of each.

The present rates of pay for the native ranks, from sepoy to Jemadar inclusive, are too low to secure the best men. With the present and increasing facility of transit, the export demand has largely increased. This has raised the bazaar prices, and improved the condition of the cultivating classes, so that it pays a man far better to remain at his home, and to cultivate his lands, than to take service in the Army on the present rate of pay.

The lowest pay of a sepoy should be Rs. 9 a month; that of a Naick Rs. 12; Havildar Rs. 15; and that of a Jemadar, 1st class Rs. 45; second class Rs. 40.

Good conduct pay at the rate of Re. 1 a month after five years and Rs. 2 a month after eight years, should also be allowed. With the above rates of pay no compensation for dearness of provisions would be required.

The powers of discharge given to Commanding Officers, under Art. 3 of the Articles of War for the Native Troops of 1863 should be restored. The repeal of this article has injuriously affected the discipline of the Native Army.

The question of reform in the present system of officering the Native Infantry, and in the organization of the Native Army, generally, seems now to be reduced to one of simple expediency.

It has been clearly proved on service, that there are not sufficient European Officers with the regiments, and as there is now no longer a "reserve of officers" to draw upon, in case of war, why not apply common sense to the efficient realization of a good object, and correct errors by the experience of the past.

To maintain an army organization that military public opinion headed by such men as the late lamented Sir Henry Durand has pro-

nounced most defective is to court disaster. Therefore to pension off the unemployed European officers, and to establish an efficient regimental organization would seem to accord in every way, with the best interests of the Indian Empire.

G. HUNTER THOMPSON, *Lieut.-Col.*,  
*Offg. Commdt. 19th P. N. I.*



## III.

**Royal Artillery Organisation and Retirement.**

IN the Proceedings of the R. A. Institution for November 1870 there appears a scheme by Captain Oldfield, proposing several changes in the present constitution of that Service. I propose to test the practicability and advisability of the suggestions made by him. To do so, it will be necessary to enter very fully into details, and to criticise somewhat freely the administration or rather working of the Artillery Service since the introduction of a measure for the eventual amalgamation of the Royal and Indian Regiments of Artillery.

Captain Oldfield observes, "there appears to be a wide-spread feeling that before long the above subject will have to be taken up by those in power," in this expression many who have practical knowledge of the present system which obtains in the Artillery Service will concur. To some it may seem a matter of duty to assist in arriving at a right solution of a question affecting as it does a special branch of the British Army. A service which has grown to greater importance from the events of the war, just concluded, on the fair fertile plains of unhappy France. "The whole of the Artilleries should be amalgamated" says Captain Oldfield, there may be and are differences of opinion on this point, but there can be none as to the intention of carrying out such a measure on the part of those by whom this question must have been considered before it was definitely decided that such should be.

As a first step towards its accomplishment, Dispatch No. 29 of 18th January 1861 from the Secretary of State for India, states, "that in order to carry out this measure to the full extent, the organisation of Indian regiments of Artillery will be assimilated to that of the R. A. The Bengal Artillery will be formed into seven brigades, the Madras Artillery into four, and the Bombay Artillery into three brigades, in all fourteen brigades with a strength of officers detailed in the margin, which is believed to be the establishment of a brigade of Royal Artillery".

|                       |                        |
|-----------------------|------------------------|
| 1 Colonel Commandant. |                        |
| 2 Colonels.           | 4 Lieutenant Colonels. |
| 8 Captains.           | 9 2nd Captains.        |
| 24 Lieutenants.       |                        |

"The assimilation of the Indian with the R. A. will involve considerable alterations of rank. Thus in Bengal seven of the Colonels will become Colonel Commandant, nine Lieutenant Colonels will become Colonels, thirteen Captains will become Lieut.-Colonels and 3 captains and 9 second captains will become supernumerary. This will cause a stoppage of promotion in the grades of second Captain and Lieutenant. But there are at present four Lieutenant Colonels, four Captains and nine second Captains in the Ordnance department, and these being seconded \* \* \* \* will more than compensate for the absorption of the three Captains and nine second Captains above mentioned." The first measure of assimilation was undoubtedly beneficial to those officers who came within the reach of its action, but it was only temporarily

beneficial to the regiment at large. The advantage to the Regiment or the Artillery Service is the subject of our present paper, and not the benefits derived by individual officers, however remotely or intimately the prospects of personal advancement may be connected with the efficiency of any particular branch of the Service. It will be necessary to exclude all thoughts of personal benefit, and to confine my remarks to the effect on the regiment generally of any measure which may come under observation to illustrate the object proposed by this paper.

Well, the effect of the first measure was to raise the standard of efficiency in respect of service and position to the subjoined level. In speaking of a standard of efficiency, it is usual to institute comparisons between different branches of the Service. This comparison will be more intelligible if the Royal Artillery is selected as the standard, for it will be conceded without question that the standard of efficiency desirable for one Brigade or regiment is equally desirable for another having exactly the same duties to fulfil towards the State. The service of the Juniors of grades on or about the 18th February 1861 was as follows:—

|                 |       |     |          |          |
|-----------------|-------|-----|----------|----------|
| Junior Colonel  | R. A. | ... | 24 years | 6 months |
| Ditto           | B. A. | ... | 32 "     | 10 "     |
| Do. Lieut. Col. | R. A. | ... | 20 "     | 3 "      |
| Do. do.         | B. A. | ... | 20 "     | 4 "      |
| Do. Captain     | R. A. | ... | 13 "     | 2 "      |
| Do. do.         | B. A. | ... | 16 "     | 4 "      |
| Do. 2nd Capt.   | R. A. | ... | 7 "      | 2 "      |
| Do. do.         | B. A. | ... | 8 "      | 9 "      |

Here with the exception of the Colonel and first captains, the two regiments were physically capable of rendering the same amount of service to the State.

The question of Artillery efficiency has been more than once of late years the subject of inquiry before a Board of Royal Commissioners. At a very recent inquiry as to the state of promotion, &c., of the Seniority Corps, the following questions and replies are recorded:—

Q. 43. Practically you are running together as fairly as possible ?

A. Yes, very fairly indeed.

Q. 51. \* \* \* \* There is no apprehension there will be a block in the Indian Artillery ?

A. No.

A pamphlet now before me, which, although published anonymously bears the impress of truth and fairness in all it states, has the following remark:—

“With reference to these replies, I attach a list showing the length of of service of the senior officers on each list on the 1st December, 1870 :



|                    | Royal Artillery.<br>Years' Service. | Late Bengal.<br>Years' Service. | Late Madras.<br>Years' Service. | Late Bombay.<br>Years' Service. |
|--------------------|-------------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Senior Colonel ... | 38                                  | 42 <sup>5</sup> <sub>12</sub>   | 44 <sup>5</sup> <sub>12</sub>   | 39                              |
| „ Lieut.-Colonel   | 28 <sup>11</sup> <sub>12</sub>      | 32                              | 31 <sup>12</sup> <sub>12</sub>  | 28 <sup>5</sup> <sub>12</sub>   |
| „ Captain ...      | 24                                  | 26 <sup>5</sup> <sub>12</sub>   | 25 <sup>5</sup> <sub>12</sub>   | 25                              |
| Second Captain ... | 16 <sup>3</sup> <sub>12</sub>       | 17 <sup>12</sup> <sub>12</sub>  | 16 <sup>5</sup> <sub>12</sub>   | 16                              |
| Subaltern ...      | 13 <sup>3</sup> <sub>12</sub>       | 12 <sup>5</sup> <sub>12</sub>   | 12 <sup>5</sup> <sub>12</sub>   | 12 <sup>5</sup> <sub>12</sub>   |

It must be admitted, from the showing above, that the rates of promotion can hardly be called running “fairly together.”

The senior colonels on the Bengal list have 4 $\frac{1}{2}$ , and Madras 6 $\frac{1}{2}$  years longer service than the Royal. Nearly the same difference exists in the lieutenant colonels, The captains approach more nearly, but still those on the Royal list have the advantage. The subalterns on the Royal list are at a slight disadvantage.

As regards the prospect of a “block,” which General Gambier considers “not likely,” in the Indian Artillery. I refer to the last *Army List*, where it will be seen that no lieutenant-colonel of the Bengal list has been promoted for more than 3 years while on the Royal list 18 have been promoted in that period. The Madras list have been fortunate lately, having purchased out several officers; but their senior lieutenant-colonel has 2 $\frac{1}{2}$  years’ longer service than the Royal Artillery of the same standing. On the Bombay list, no lieutenant-colonel has been promoted for upwards of a year, during which period seven of these officers of the Royal Artillery have obtained the advanced rank.

I would further instance, to show what chances of a “block” obtain, that there are 27 captains on the Bengal list, 11 on the Madras, and 4, on Bombay, who have longer service than the junior lieutenant-colonel of the old Royal Artillery; also that the senior captain of the Bengal list entered the service before 46 lieutenant-colonels on the Royal list who have thus passed over him.

Thus far I have shown that, as regards rates of promotion, the Royal and Indian lists can hardly be said to be “running fairly” together, and further, that a serious “block” already exists in the Indian list.

It will be observed that the standard of physical efficiency has deteriorated both in the Royal and Bengal list since February 1861 to a greater or less degree in the several grades. The next point for consideration is to trace the causes which have led to this lowering of the standard. To do this thoroughly, it will be necessary to advert on certain measures which have been resorted to from time to time, either from motives of necessity, expediency, or uniformity. And first with reference to what has been done for the Royal List. It would appear that in 1866, and again in 1869, the parliamentary grant-in-aid of retirements amongst regimental Colonels having completed 30 years’ service was increased, whereby the efficiency of the senior grades has been maintained at a reasonable standard; the services of the Lieutenant Colonel and Captain last promoted being just over 29, and just under 24 years respectively. But these grants-in-aid of retirements have failed to maintain the desired

efficiency in the subaltern grade. In 1861, the service of the senior subaltern was just over seven years. Now it is more than thirteen. This state of things has however been owing to the large batches of admissions into the R. A., during and subsequent to the Crimean War. It might have been alleviated in some measure by applying the sums of £600 not taken up by Regimental Colonels to the purchase of the retirement of officers below that grade, but it seems that the senior officers have a lien on this grant, I think it cannot be alienated.

Now, let it be seen what has been done for the officers of the Bengal Artillery. It will be observed by Dispatch No. 29 of 18th January 1861 that the Secretary of State displays some solicitude as to the promotion prospects of the officers by the introduction of the first measure of assimilation, in all subsequent measures there is a marked absence or disregard to their prospects, or it may be that the supposed immense advantages which accrued to the Indian Artilleries preclude the possibility of any injury being done to them. In 1863, the Secretary of State offered to Colonels of the Bengal Artillery seven annuities of £200 each in addition to pension, of these, three were taken up, two by seconded Colonels, and one by an effective Colonel.

In 1865, considerable promotion followed on seconding several officers on staff employment or removing them into the Staff Corps. The Subalterns getting as many as 14 steps. In July 1867, Colonel Dickens who had been absent from regimental duty since 1850 was brought back on the effective strength in accordance with the provisions of G. O. No. 516 of 21st June 1864.

In reference to officers absent from regimental duty, the following has been laid down : " His Royal Highness has informed me that it is " very desirable that, as a rule, Artillery officers should not be employed " in other than strictly regimental duties beyond ten years, and that as " there are obvious reasons why it would be disadvantageous to the " *interests of the service* to perpetuate a system by which officers, who " as subalterns and captains may have been engaged in miscellaneous " duties for an indefinite period of years, may return to their regiment as " field officers to exercise superior commands with the duties of which " they would necessarily have very little acquaintance.

" His Royal Highness conceives that the fact of such employment " being connected with the Ordnance Department does not lessen that " objection," See Secretary of State's Dispatch November 30th 1866 G.O. March 14, 1867, No. 296.

" All Artillery Officers, whether placed on the seconded list or not " who have been detached from their regiment for less than 10 years to " be informed that they must return to regimental duty within that " period, and that their employment on the Staff will not be prolonged " beyond that period,"—Dispatch of Secretary of State, December 30th 1865, No. 391.

On this question being submitted to his Royal Highness, it was

ruled that as Colonel Dickens' appointment was a *quasi* military appointment, his re-absorption into the effective strength of regimental Colonels was right and proper, Colonel Dickens still holds the appointment of a Secretary to the Government of India, D. P. Works, where his services have been invaluable and duly recognised by the Government.

In March 1868, on Colonel Whistler's promotion to Major General by a casualty in the Indian List of General Officers in accordance with the practice which had obtained from time immemorial and, which practice since has regulated to a great extent promotion in the several Indian Artillery Regiments would appear to have been guaranteed by Acts 21, 22 Victoria Cap. 146 on transferring Military Officers of the East Indian Company to the Crown, guaranteeing the same advantages of promotion, as if they had remained in the East Indian Company's service, the separate List was formed, that is the Generals of Indian Artillery were placed on a list distinct from those of the Indian Army, their number hitherto unlimited, was fixed at 26, the excess was to be absorbed one in every three casualties. I take the following from a pamphlet which I have already quoted above.

"With regard to the promotion of the officers of Indian Artillery to the rank of Major-Generals, the Commission (assembled to inquire into grievances of Indian officers) declared themselves unable to determine the effect produced by the warrant of January, 1862, upon the prospects which such of their officers as were not Colonels before amalgamation would have of becoming Major Generals; but they state that the change will ultimately, to a small extent, be beneficial to the Ordnance Corps."

The Commission then went on to recommend the formation of a separate list although, as above acknowledged, they were uncertain what would be the result.

The Indian Artillery Colonels were thus removed from the Indian gradation list, and formed into a distinct establishment.

To show the amount of injury received from this measure, I quote the following from the evidence given by Major-General Sir G. Balfour before the Committee appointed to enquire into the question of the supersession of colonels of H. M. British Army by colonels of the Indian Army, which assembled in the beginning of this year :—

"According to Hart's Army List, no less than eighteen Indian Artillery officers have been superseded in the rank of Major-General by Staff Corps and Indian Army Colonels, although they had prior dates of commission in the latter rank.

"Had these eighteen Colonels of Indian Artillery remained on the Indian gradation list, they would ere this have succeeded to the rank of Major-General, and would then have vacated their regimental position, the regimental vacancies being filled up by promotions in the res-

“ pective corps. The pecuniary loss sustained by the regimental officers of Indian Artillery in consequence of being deprived of these promotions to the grade of General, may be calculated at £15,000 per annum. Another loss that must be sustained by the regimental officers whose advancement is thus delayed before these eighteen officers vacate their positions in the regiment in consequence of promotion to the rank of Major General, must be very considerable in a long course of years.”

Colonel Adye, C.B., also in his evidence before the same Commission, states :—“ The Warrant of 1864 did not contemplate that in 1868 the Infantry and Cavalry Colonels of the Indian Army should be separate from the Indian Artillery and Engineers, giving the former an *enormous advantage over the latter*, who are now *suffering severely* in consequence.” And he further states, in answer to another question on the same subject put to him : “ It was a *wrong done* absolutely to the *Indian Artillery*.”

The operation of this “ Separate List” has been more injurious to us than any other measure resulting from amalgamation.

These preliminary details bring us to the present state of the regiments which it is proposed to amalgamate. I will now proceed to apply Captain Oldfield’s suggestions, but before doing so some apology I consider is due from me for the lengthy detail and apparently irrelevant matter which has been brought under observation. My object in doing so is to show the necessity for some change, either partial or radical, in the present organisation of the Artillery service. And this I hope I have succeeded in doing in the details I have entered into.

From the subjoined tabular statement “ A” it will be possible to arrive at a fair understanding of the effect on the Artillery service taken as a whole by submitting it to the process proposed by Captain Oldfield. It gives the following result :—

1. That for a sum of £30,450 a year the Artillery amalgamation can be accomplished within six months.
2. That the heavy outlay for supernumerary officers now incurred by the system of “ seconding” is got rid of.
3. That a surplus of 225 Officers (2nd Captains and Lieutenants) is available for the Militia, Volunteers and Local Indian Artillery.

Let us consider these points. First, the Indian Government has just been saved the cost of (5) five Horse Artillery Batteries. Assume the annual cost of one to be £25,000. Here then are the ways and means of putting our Artillery service into shape, of moulding it into the organisation which it is to assume eventually. The Home Government propose an outlay of eight millions to abolish a system which stops the way to all reform in the British purchase Regiments. This amount at 3 per cent. represents an annual expenditure of £240,000. Can

therefore one-eighth of this last sum be considered too heavy a cost to remove the delay which attends the organization of the Artillery service.

2. Captain Oldfield proposes that there shall be no supernumerary Officers. Here I disagree with him, it bars the Artillery Officer from Staff employment. Who can tell, whether there may not be a Henry Lawrence, a James Abbott, a Shakespeare, a Cautley and an Everest amongst the young officers of the present day in the Royal Artillery. I would allow a fair field for the development of "specialities." All who pass through Woolwich into the Artillery are, it may be fairly assumed, well-educated gentlemen, who after having mastered the mysteries of regimental duty may, in many instances, turn their leisure and their minds to more congenial pursuits. The "seconding" system, if properly applied, is sound and reasonable, and advantageous to the regiment and to the public service ; but there is an uncertainty in its application. It is considered undesirable that an officer should revert to regimental duty after a continued absence therefrom for 10 years, but this ruling is again overruled by the nature of the Staff employment, in which an officer may be engaged. It may be the Brigade or Divisional Staff of the Army, or the Survey or Department Public Works, which being *quasi* Military, are considered not to be prejudicial to knowledge of Artillery matters, and therefore such Officers are not invariably seconded. To use a generally adopted phrase, it appears to be "complicated, uncertain in action, based on no clear principle, and inadequate for its purpose," and under such circumstances it would be better to have no supernumerary Officers. The Regimental List No. 189, for February 1871 shows (36) thirty-six Officers not performing regimental duty with the Royal Artillery who are not seconded, some of these are with Local Native Batteries, but others never see a gun or gunner from month to month and year to year.

3. The surplus of 225 officers includes 77 seconded officers. Whether this surplus exists tangible, or is only a peculiarity appertaining to the science of numbers I am unable to say.

The question next for consideration in Captain Oldfield's scheme is, as to its adaptability to the Artillery requirements of India. There are 50 European Batteries serving in Bengal. We should require the following, *viz.*—

6 Divisional Commanders being Colonels on the Staff attached specially to Army Divisions.

16 Divisional Staff Captains.

14 Colonels, Second in Command.

14 Adjutants.

11 Horse Battery Commanders

11 ditto Second in Command

33 ditto Subalterns

23 Field Battery Commanders

23 ditto 2nd in Command

69 ditto Subalterns

16 Garrison Battery Commanders

32 ditto Subalterns

} Horse Brigade.  
 }  
 } Field Brigade,  
 }  
 } Garrison Brigade.

This gives a total of 258 officers. It will be seen that the total now is 346 including 36 in India but absent from regimental duty, and 65 at home on leave, etc., etc. Now what are the defects of the present system of Artillery Organization, as applied to the requirements of India in the matter of Artillery, which would be removed by adopting Captain Oldfield's plan.

1. We should avoid having a surplus of Head Quarters and Staff of Brigades, that is India has 88 Batteries, being 11 Brigades, but it has actually 16 Head Quarters of Brigades.

2. It would place the Colonel Divisional Commander in a position more becoming his important command.

3. It would diminish the tendency to "rusting" to which many Field Officers, owing to the glut in the market of that commodity, are liable from want of occupation.

4. The Battery Commander would hold a rank more in keeping with his command. "A battery with its guns is equivalent to a regiment with its colours, and is to be selected accordingly." These appear to be the salient points of Captain Oldfield's scheme applied to India. Let us remark on them. The first must commend itself to all having financial proclivities. If 11 men can do the work equally as well as 16, why employ more.

The second point is one, which from the beginning has always been substantially denied to the Artillery in India:—"The Viceroy and Governor General of India having decided that the home system of district and station Artillery commands shall, *as far as* practicable, henceforward obtain in India in supersession of the present system. The Head Quarters of only one Brigade of Artillery will be located in each Division or District, and the Artillery command of the Division or District will be exercised by the Officer commanding the Artillery Brigade without "extra emolument."

The practical result is: a Colonel commanding a Brigade at a station with two Horse Batteries, two Field Batteries and a Garrison Battery commands these locally, besides three or four others in his Division. A Battery with its guns is equivalent to a regiment with its colours, and is to be selected accordingly. The Brigade commander in the above case would be commanding four and a fraction of a regiment, but he only draws the same pay as a Lieutenant Colonel Commanding a regiment. The growing importance of Artillery in War would seem to recommend a modification of the present system. I have never been able to understand why the Artillery and Engineer Officer is proscribed from all high military command in the British Army. Look at the working of a different practice in India. Sir G. Pollock, Sir S. Whish, Sir A. Wilson, Sir H. Tombs, Sir J. Cheape, and last but not least the present Commander-in-Chief Lord Napier of Magdala, have all in their turn displayed fitness for high command.

Let us hope that with the abolition of purchase this unreasonable proscription of Officers, the most scientifically educated of all Officers in H. M.'s Army, may be withdrawn.

3. The third evil arises from the one immediately preceding. That is, if a Colonel can only draw pay by virtue of his Brigade command, he naturally retains it, and actually does all the executive work of the Local command of Artillery, and thus there is no work for Field Officers at the same station as himself. Their professional knowledge is called into activity only when some unfortunate Gunner is to be awarded a heavier punishment than three days C. B. Such a training for five or six years would, I can quite conceive, render an Artillery Officer exceedingly rusty.

The fourth point is one that deserves consideration. Two men holding equally important commands go into action, both, if they survive, are rewarded, one being a Lieutenant Colonel gets the C.B., the other being a Captain gets a brevet majority.

I have taken up Captain Oldfield's scheme, and applied it as far as my judgment can guide me to the present constitution, not of the Royal Artillery but to the Artillery Service especially. As regards the regiment to which I have the honor to belong, I have, I think, shown the necessity which exists for a modification of the present state of Artillery Organisation. Not only because the standard of physical efficiency is unequal but, because events in the campaign just closed in France would appear to recommend such modification. There appear two objections to its adoption, one that of expense, and the second that of the supersession of the Senior Officers of the Royal Artillery by the older officers of the Indian Artillery. In the Junior grades the supersession will be the other way.

Both objections, however, are trifling as compared to the urgency and requirements of an Artillery more elastic, more easily and less expensively (comparatively speaking) administered than the British Artillery Service in its present disunited state, Captain Oldfield deserves credit for having started the matter and his scheme is well deserving of consideration.

## A.

*Capt. Oldfield's scheme of R.A. Organisation, &c., worked out in figures, showing the result of the Amalgamation as proposed by him.*

|                                                                                                                | Generals. | Colonels. | Lt.-Colonels. | Major. | Captains. | 2nd Captains. | Lieutenants. | TOTAL. |
|----------------------------------------------------------------------------------------------------------------|-----------|-----------|---------------|--------|-----------|---------------|--------------|--------|
| Effective on Regimental List for February 1871, No. 189                                                        | 64        | 62        | 122           | ...    | 248       | 282           | 678          | ...    |
| do.                                                                                                            | ...       | 9         | 15            | ...    | 26        | 20            | 7            | ...    |
| do.                                                                                                            | ...       | ...       | ...           | ...    | ...       | ...           | ...          | ...    |
| TOTAL                                                                                                          | 64        | 71        | 137           | ...    | 274       | 302           | 685          | 1,533  |
| Add by promotion "levelling up"                                                                                | ...       | 21        | 41            | ...    | 38        | 47            | ...          | ...    |
| Deduct promoted as above                                                                                       | 64        | 92        | 178           | ...    | 312       | 349           | 685          | ...    |
|                                                                                                                | ...       | ...       | 21            | ...    | 41        | 38            | 47           | ...    |
| Remaining                                                                                                      | 64        | 92        | 157           | ...    | 271       | 311           | 638          | 47     |
| Deduct by proposed retirement of 15 Colonels over 40 years' service on £750, and 32 Colonels on £600 per annum | ...       | 47        | ...           | ...    | ...       | ...           | ...          | ...    |
|                                                                                                                | 64        | 45        | 157           | ...    | 271       | 311           | 638          | 1,486  |
|                                                                                                                | ...       | 6         | 101           | ...    | 145       | 124           | ...          | ...    |
| Deduct by promotion to complete Establishment                                                                  | ...       | ...       | ...           | ...    | ...       | ...           | ...          | ...    |
|                                                                                                                | 64        | 39        | 56            | ...    | 126       | 187           | 638          | ...    |
| Add promoted as above                                                                                          | 6         | 101       | 78            | 67     | 124       | ...           | ...          | ...    |
| Remaining                                                                                                      | ...       | ...       | ...           | ...    | ...       | ...           | ...          | ...    |
| TOTAL                                                                                                          | 70        | 140       | 134           | 67     | 250       | 187           | 638          | ...    |
| Captain Oldfield's proposed establishment for 226 Batteries                                                    | 70        | 140       | 134           | 67     | 250       | ...           | 600          | 1,261  |
| Excess over proposed Establishment                                                                             | ...       | ...       | ...           | ...    | ...       | 187           | 38           | 225    |

Note.—£600 × 32 = 19,000£ being about  $\frac{1}{4}$  of £42,000 the Annual grant made to the Royal Brigades to effect retirements in the senior grades.



## IV.

**On the Carriage of the Regimental Reserve of Breech-loading Ammunition in Mountain Warfare on the Punjab Frontier.**

DURING the discussion which preceded the introduction of the breech loading Rifle into the British Service, among the chief considerations urged against its adoption, were the anticipated waste of ammunition, and the difficulty of keeping up the supply with sufficient promptitude on the field of battle.

To meet the latter objection, numerous suggestions were brought forward and discussed in the Military journals some years ago, but I am not aware, whether any definite plan suited to the conditions of European warfare has as yet been adopted by our Government.

In the war of 1866 against Austria, the Prussians were the first to submit the new armament to the actual test of warfare on a large scale against a first class European power, and the expenditure of ammunition by their Battalions engaged upon this occasion was so unexpectedly small as to completely falsify the predictions hitherto made to the disadvantage of the new weapon in this respect.

It must, however, be remembered that the Austrians, like the Danes a few years previously, were armed with the old muzzle loader, and that the natural tendency of the crushing superiority of the Prussian Infantry fire would be to shorten the action, so that it is evident that no reliable inference as to the expenditure of ammunition in future wars can be drawn from a consideration of this campaign.

Very different conditions however existed between the belligerents in the late war between France and Germany, and, although no official history of the war has as yet appeared, yet if any dependence is to be placed upon the accounts of special correspondents, we learn that the French on more than one occasion were compelled to relinquish their hold on strong positions, owing to the exhaustion of their pouch ammunition, and the absence or want of mobility of their reserve supplies.

As this important subject will probably attract renewed attention at home, when the official accounts of the late war begin to be discussed, it may not, perhaps, be out of place to publish in the Journal of the United Service Institution of India, a few notes from a report drawn up on this subject towards the end of 1868 in reply to a letter from the Adjutant General of the Army with reference more particularly to the experience gained during the late campaign in Hazara.

The 1st Battalion 6th Regiment marched from Rawal Pindi for Hazara on the 13th August 1868 at the very hottest period of the year. The reserve ammunition accompanying the corps consisted of 392 boxes of 500 rounds each, in all 196,000 rounds of Boxer ammunition carried on 49 camels at the rate of eight boxes or 4,000 rounds per camel.

As it had been ascertained by actual experiment a few months previously that the ammunition when exposed for a few hours to the direct rays of the sun was rapidly destroyed and rendered useless by the decomposition or melting of the cement, and probably by the expansion of the metal envelope, every precaution was adopted for its preservation against the effects of the intense heat then prevailing.

With this view, the cases were stored in a large double fly tent pitched under trees whenever possible, and the "kunats" were raised all round to ensure circulation of air, non-conductors of heat such as spare tents, "gunny" bags, "suleetahs," &c., were piled over the boxes, and tarpaulins were furnished for each load for protection from rain.

These precautions were entirely successful, and the ammunition on the return of the regiment to Rawul Pindee was found quite uninjured, although it had been exposed to extremes of heat, cold, and weather for nearly four months, and for three weeks of this time without even the protection of a tent,

In considering the circumstances under which the regiment was taking the field, one of the first points that suggested itself was the evident unsuitableness of the 500 round ammunition boxes to the conditions of mountain warfare, and therefore the difficulty of bringing the reserves rapidly to the front over ground often hardly practicable even for Infantry.

On consulting with Brigadier General Vaughan, C.B., upon this very important matter, I was informed by that officer whose long experience of hill warfare entitles his opinion to great respect, that the same difficulty had been felt by the regiments of the Punjab Frontier Force, and that they had adopted the expedient of having each box fitted with leather cartouches furnished with handles, each cartouche containing as many rounds as a man could carry with ease.

This excellent plan obviously secured the greatest possible mobility over difficult ground, but it was plainly inapplicable to our case at such short notice, and as the only improvement available under present circumstances, permission was obtained to attach a second rope handle to each box. There was some difficulty in effecting even this with the means at our disposal on the march, but it was surmounted by the somewhat clumsy expedient of cutting notches in the four opposite edges of each box to hold the rope.

The wedge-shaped sliding lids of the ammunition boxes of the pattern under discussion are secured by a single screw which is liable to set fast, and indeed while on the march to Hazara, I was informed, that on one occasion during the Abyssinian campaign, much difficulty was found in getting at the contents of some of these boxes either from the above cause, or from the absence of a turncrew at the moment.

Taking advantage therefore of this warning, orders were given for

the screw of each box to be removed, well greased and then replaced, so that the head projected slightly from the surface of the lid.

It might be a matter for consideration, whether it would not be an improvement to fasten the lid by a small brass button (fitted with stiff friction, so that it could be turned round by the finger, or by a blow from a stone, or the heel of a boot), either by itself, or in combination with the present screw, the latter being removed on service.

Upon the arrival of the regiment at Oghie, the immediate base of operations, it became necessary to substitute mules for camels to carry the ammunition into the hills, and Major General Wilde with Brigadier General Vaughan decided, as the result of their experience, that the limit of a mule load should be 1,600 rounds, in consideration of the difficult ground to be traversed.

The only means of re-arranging the ammunition in conformity with this plan was by removing 100 rounds from each box, and filling up the vacant space with the gunny envelopes removed from the boxes.

Thus each mule carried four boxes of 400 rounds each, or 1,600 rounds to a load, and though severely tried during three weeks' incessant marching over mountains without the vestige of a road, their strength and endurance were not unduly taxed with the load above mentioned.

But against this mode of packing, the following considerations present themselves. The vacant space in the boxes, if not filled with gunny would probably have to be packed with straw as the only available substitute, and both these substances would absorb moisture from the atmosphere in the event of continued wet weather to the probable injury of the cartridges.

Each mule is uselessly loaded with the weight of one box nearly, and as the four boxes have to be enveloped and roped up in the "suleetahs," the contents cannot be got at so rapidly as might be desirable.

To these objections it may be added that the opening and re-packing of each box was a long and fatiguing operation for which time might not be available on future occasions, and much difficulty was found in providing for the safe custody in camp of the 100 rounds removed from every box for which there was no proper storage.

As the result therefore of our experience on this occasion, I would beg to submit the following Memorandum :

On a force taking the field from Rawul Pindi in support of any threatened point on the Punjab Frontier, the regimental reserve ammunition owing to the scarcity and cost of mule carriage would usually be conveyed to the immediate base of operation on camels, while after entering the hills, mules are the only means of transport practicable.

The difficulty therefore has to be faced, of adapting the cases to both means of transport.

From the opinion of Generals Wilde and Vaughan, amply confirmed by the experience gained in the late Huzara campaign, it may, I think, be assumed that 1,600 rounds of Boxer ammunition should be the maximum load of a mule for operations over difficult ground.

But in order to develop to the utmost, the power of breech loading arms, it would appear that some means are urgently required especially in view of the peculiar nature of warfare on this frontier to increase the mobility of the regimental reserve ammunition.

It is evident from the above considerations that the present 500 round boxes are from their size ill adapted to Mule Transport. They are moreover too heavy to be carried up hill or over broken ground by one man, while the fact of their being furnished with only one handle makes it almost impossible for a second man to assist in handling them.

As four of these boxes must go to a mule load, it becomes necessary as above explained, to remove a portion of the contents of each box to avoid overloading the mule, and the load thus constituted requires to be enveloped and roped up in a *sulectah*, involving the labor of two men, at least, to say nothing of the trouble and delay before any portion of a mule's load can be got at.

I would therefore suggest that a certain number of ammunition boxes of the capacity of 800 rounds each should be made up and kept in store at Rawul Pindi and Peshawur to meet the special requirements of Frontier service.

The boxes should be fitted with four rectangular leathern cartouches, each to hold 200 rounds and to be furnished with a cover and handle at the top.

On a regiment taking the field its ammunition should be at once transferred from the 500 round boxes into these cartouches and the latter placed in the ammunition boxes.

The following advantages would appear to be secured by some such arrangement as that suggested :

1. The 800 round boxes while more especially adapted for mule transport would also be available for camels. Four thousand rounds packed in five of them would be a less load for a camel than the same number packed in eight smaller boxes, and probably no practical difficulty would be found in packing the fifth box over the saddle, as the centre of the gravity of the entire load would be sufficiently low down to ensure its stability on the march, or loads of six boxes might be allotted to the strongest and four to the weakest camels if considered a better arrangement.

2. The mule load of eight cartouches or 1,600 rounds would be readily accessible without unpacking the mule, and the whole or any

portion of it could be transported by hand with the utmost rapidity to any point where it might be required.

3. Each box being fitted with chains and hooks for the mule saddle, no suleetas or ropes would be required, and therefore a much smaller fatigue party would be sufficient for loading and unloading the animals.

4. In the event of a mule being shot or going over a precipice, its load could be at once distributed in small portions among the other animals or carried away by hand.

The foregoing suggestions for the mobilisation (if I may so term it) of the Reserve Ammunition of Regiments, are by no means offered as a final solution of this difficult question, but rather in the hope that some of the officers of the Punjab Frontier Force, or of British Regiments who have served on the Frontier may be induced to give us the result of their experience on a matter which, considered in connection with the new armament of the British Infantry, will compel serious attention the next time we are engaged in real warfare with the hill tribes over the Punjab Frontier.

C. C. OSBORNE, *Colonel,*  
*6th Royal Regiment.*

---

The following letter from Quarter Master Sergeant Martin, which has kindly been placed at the disposal of the Council by Colonel Dillon, contains a suggestion on this subject and is therefore published:—

*Landour, 17th March, 1871.*

SIR

I have read that in many engagements important posts have been lost, and others equally important would have been gained, for the want of a few hundred rounds of ammunition (Rifle). I respectfully beg leave to offer a suggestion, which I think would obviate this, *viz.* let one man of each section of a company carry instead of his kit a great coat, blanket, and a waterproof contrivance with pockets, to be placed between the coat and blanket, to hold a number of rounds of Ammunition equal in weight to the man's kit, say 200 rounds, this would give a company 800, and a Regiment of ten Companies 8,000 rounds of Reserve Ammunition, thus each Company, Regiment, and Brigade of Infantry would carry its own Magazine on a small scale. The men's kits could be placed on the Ammunition waggon, and if they should be too late to supply their Regiments with fresh Ammunition (which has often been the case), they ought not to be too late with the kits for the use of the men after perhaps a hard day's fighting.

The men told off for this duty should always be in the rear rank, and in case they should be killed or wounded, their right and left hand men should be ordered to secure the Ammunition, also the Non-Commissioned Officers in the Supernumerary ranks should be warned to see these orders carried out even to the extent of carrying the Ammunition themselves, thus securing an additional supply ready at hand which the rapid firing of the Breech loading Rifles of the present day seem to necessitate.

I am, Sir,  
Your obedient Servant,  
GEO. MARTIN, *Qr. Mr. Sergeant,*  
*Convalescent Depot, Landour.*

---

## V.

**On the Defence of the North Eastern Frontier.**

YOU ask my views on the defence of the N. E. Frontier ; by the N. E. Frontier I understand the tracts of country lying between Darjeeling on the N. W., Suddya N. E., Dacca S. W., and Munipore S. E.

The first mentioned station is not contained within the E. F. command as at present constituted, but belongs naturally and strategically to it. The latter place is beyond the limits of the empire, but having imposed upon the country a ruler obnoxious to the people, and having accorded our protection to the usurper, we find ourselves almost annually compelled to support our election by force of arms.

I believe a more difficult question could scarcely be propounded than how to defend this vast tract of impenetrable mountains and pestiferous jungle from the incursions of the hardy highlanders who inhabit and surround it.

That our efforts to do so have hitherto failed, the whole history of the country since the conquest of Assam in 1824, until the present moment testifies ; the history of our wars is a list of defeats and failures, until the tribes have learnt to despise our blundering efforts to chastise them, and eagerly to appreciate the black mail which in the end the Government pays to secure their forbearance.

Politically the first step in the regeneration of this province seems to me its severance from the control of the Bengal Government, and its constitution as a Chief Commissionership under the most able and energetic administrator available.

It would be useless to attempt even the wisest or best considered military operations on this Frontier, unless the commander had the hearty support of all the Civil officials, without it no General who valued his reputation would willingly undertake the conduct of any Military operations.

The magnitude of the problem proposed must not be lost sight of ; we are required to hold and defend a country larger in its actual extent than England and Wales, larger in proportion to its means of communication than the whole of Europe, with five Regiments of Native Infantry. A country moreover for the most part of pestilential swamp, intersected by mighty streams, and centered and surrounded by rugged and impenetrable mountains, inhabited by hardy and warlike clans. Success under such circumstances can at best only be partial, and will probably be due as much to the ignorance or forbearance of our enemies as to the force of our arms.

However, in the present financial condition of the Empire, it is hardly likely that the Government will be inclined to sanction any increase of the military expenditure, we are, therefore, led to consider whether with the means already at our disposal, we can honestly fulfil the

obligations of the sovereignty we claim, by insuring our subjects from attack, and assuring them a peaceable possession of their lands and property; and here it may fitly be remarked that our authority over a great extent of this frontier, especially the most turbulent portion of it, is rather fictitious than real, we have painted the maps red, but savages have not got atlases, in truth we have rested content as the Burmese did before us in claiming the subjection of these territories, but neither they nor we have succeeded in supporting our pretensions when it has suited the convenience of our so-called subjects to ignore them.

War being an exact science, certain causes produce certain effects, with limited means therefore we must be contented with partial success.

The extent of the frontier is too large, the force at our disposal too small to admit of a defensive policy, such a policy, at least as is now so popular in Europe as the non-intervention policy, a trader's incarnation of political selfishness. A policy of rigid repression is alone feasible. The British Government must make its power felt and feared. To do this we must greatly increase the efficiency and mobility of the diminutive force at our disposal.

Though experience shows that Providence fights on the side of the heaviest battalions, it is no novelty to train and equip a small force to be in all respects as efficient as a much larger one, and the efficiency of a force may be considered to be relative to the foe it is required to contend against.

The necessity which exists for counterbalancing deficiency in numbers by increased efficiency would appear to have been lost sight of on this unhappy frontier, where for years the local regiments were the worst in the whole army, and where allowing for the revolution and partial reorganisation which the collapse of the system during the late campaign in Bhootan rendered imperative, things are but partially changed for the better. If, as is natural, we turn to the Punjab Frontier Force for guidance, we find that the protection of those regions is confided to a force the flower of the whole Native Army, officered entirely by selected men, and commanded by a General, whose peculiar ability in his profession has pointed him out for the position, but all this is changed at the other extremity of the empire, with a greater extent of frontier to guard, and a far smaller force to accomplish the task, a minimum amount of efficiency has been attained. Appointments to the local regiment being popularly, and apparently not without reason, esteemed as professional death.

This should be all changed in the first place by appointing young and active officers of promise to the local regiments, and by insuring them in return for superior qualifications and greater risks, quicker Regimental advancements than in the rest of the Native Army, there need not be any difficulty in this, the effects of the climate permitting of exceptionally rapid advancement to the survivors.



To a certain extent officers in these regiments should be secure from supersession from outsiders. I say only to a certain extent, as the infusion of new blood is always a healthy process, and nowhere it is more necessary than in Assam ; but when the opportunity occurs which permits of an outsider being brought in without prejudice to the claims for rapid advancement, which we will suppose conceded to the officers of the local regiments, the officers so brought in should have more solid claims for promotion than that of having for some years held a lucrative appointment in one of the civil branches of the service, an appointment such as this appears to be an injustice to all those who have accepted frontier service with its disagreements in the hope of thereby earning some recognition of their services.

To turn to the men of which the three frontier Regiments were composed. Unfortunately the inhabitants of the plains of Assam are a weakly and debauched race, and it has been decided not to enlist them as soldiers. The same objection does not extend to the Hill Tribes, many of whom are of fine physique, and from their knowledge of the country and the manners of its inhabitants would, if enrolled in our ranks, be invaluable as soldiers, it is I am aware the fashion to say, that these tribes will not take service, but I doubt if the experiment has ever fairly been tried, if not, the most favorable opportunity now presents itself for attempting it through the influence of Captains Gregory and Williamson, the lately appointed Deputy Commissioners with the Naga and Garrow Tribes. Were hill men obtainable, I would propose their enlistment into the 44th Native Infantry, which is located at Shillong in the Kassia Hills, the climate of that place being suitable for them. The 44th Native Infantry consists at present of Hindustanis, and an inferior class of Goorkha or rather Nepaulee, the Hindustanis would be well replaced by the indigenous hill Tribes, the Regiment would then under the advantages we have supposed of selected officers take its place as the Guide Corps of the N.E. Frontier, making the corps of Guides of the Punjab Frontier Force its model.

The 42nd and 43rd Native Infantries are composed mainly of Hindustanis, and must I suppose continue to look to this class for recruits. Service in Assam involving expatriation and a complete change in climate and diet, is very unpopular with the inhabitants of the Punjab ; I fear, therefore, that it will be found very difficult to keep up any large number of this most soldier-like race in these local Regiments, moreover the Punjabee loses much of his vigor when reduced to a rice diet. The Oude man, on the contrary, thrives fairly upon it and though now fallen very low in popular estimation, has when well-drilled and commanded, proved his capacity as a soldier in all our campaigns on this continent ; I think, therefore that if in the first instance recruits are well chosen, and then carefully trained by selected Officers, good and reliable regiments might be expected.

The Sepoy in Assam receives a very considerable addition to his pay under the regulation for compensation for dearness of provisions, it ought

not therefore to be impossible to select men for enlistment, while on the subject of this compensation for dearness of provisions, the sepoy's avarice very frequently leads him to fill his purse at the expense of his stomach, reducing his strength and filling the hospitals. Commanding Officers, should adopt strenuous measures to check the abuse of this allowance whether or not it might not be advantageous to abolish this grant of compensation, and proportionally increase the pay of these Local regiments, is a question worthy of consideration. The three Native Infantry Regiments in Assam are now localized to their respective stations, the Head Quarters of the 42nd being at Debrogurh, the 43rd at Cowhatty, and the 44th at Shillong in the Kassia Hills, an arrangement which is unfair, and works very injuriously to the well being of the Force, and which the pseudo Goorkha element of the 44th Native Infantry gives it no sufficient right to claim. Were the 44th reconstituted as a Guide Corps as above recommended, it would then be proper to retain it ordinarily in the hills, but in this case, the 42nd and 43rd Native Infantries should periodically exchange stations, a measure conducing most materially to the efficiency of either regiment, and being likely to demonstrate more readily to the inhabitants that it is at all times possible for us to move up troops to their neighbourhoods.

Whatever weight we may attach to the arguments of those who insist that our Native Troops should be armed with a weapon, which will soon with the bow and arrow possess only interest for the antiquary, the exigencies of our position on the Eastern Frontier, and the absolute necessity which exists for counterbalancing our want of numbers by offensive power, should here be permitted to decide the question, and no time should be lost in arming these frontier regiments with breech loaders; even if for the sake of argument it be admitted that the experiment would elsewhere be dangerous, the geographical position of these regiments is ample guarantee for their fidelity.

On the subject of Artillery, experience, I think, shows that in Mountain Warfare the effects obtained are in no way commensurate with the difficulties of its transport; mountains, especially when as on the Eastern Frontier covered by dense jungle, not permitting the development of the offensive qualities of this arm. Mortars are very useful for the reduction of stockades, and have the advantage of being more portable than guns, the 5½ inch is the smallest that can be depended upon for having any effect on the heavy shingles of which these stockades are frequently constructed; at any rate two of these Mortars with the necessary equipment and ammunition should be maintained at Shillong, a detail of the 44th Native Infantry being in the absence of professional gunners instructed in their use.

It has been claimed by the advocates of rockets that they are "the soul of Artillery without the body," owing to their extreme portability they have always possessed the most apparent advantages for mountain warfare, and recent improvements have made them reliable, I think that a battery of Hale's 6-pr. Rockets, such as we had with the Naval

Brigade in Abyssinia would be of the greatest advantages on the Eastern Frontier, and this equipment I would recommend to be attached to the Infantry Regiments at Shillong and Debrooghur. Details of these Regiments being instructed in their use.

Though the Elephant is par excellence the beast of burden in Assam, a proportion at least of mule carriage should be maintained for the transport of the mortars and rockets. Small as the Force at our disposal in these regions is, it has been unnecessarily frittered away in small detachments, many of which might advantageously be withdrawn, their places being supplied if necessary by Police. I would instance Golaghat, a small civil station in the Sebsaugor district, occupied by a detachment of 50 men of the 42nd Regiment Native Infantry, a detachment of this strength is useless if intended as a support to Captain Gregory's (Deputy Commissioner's) advanced post at Samogooting in the Naga Hills, while it is unnecessary for the defence of the few residents of the station, who are not exposed to any sudden attack. It is proverbial that weak detachments invite attack, and the experience of the Eastern Frontier has proved the truth of the assertion. It would I think be strategically prudent to concentrate our forces in Assam at Shillong, Gowhatty and Debrooghur, maintaining only Cachar and Suddya as Military Outposts. Cachar looking to Shillong for support, Dacca being the reserve of Shillong and Suddya being supported from Debrooghur. Were the Lallee Chaprie, (between the Lallee and Dihong rivers at their confluence with the Brahmapootra) selected, as has been suggested, for our Military Station in Upper Assam, a still further concentration would be possible as then it would be unnecessary to maintain a garrison at Suddya. Buxa in the Bhootan Doors is supported by Julpigori, and has a reserve in Darjeeling.

The small Station which it is here proposed should be confined to the protection of the civil power might be supplied with masonry towers, similar to the one at Dikrang and those along the Singphoo Frontier between Suddya and Jeypore; these towers while capable of affording protection to a number of persons could easily be defended by half a dozen men against the attacks of any savages.

What an important effect such a concentration might be expected to have on the efficiency of the force, may be inferred from the fact that Colonel Rattray, Commanding 42nd Native Infantry, informed the writer that when he assumed the command, there were men who had been 14 years on detached duty, that is removed from all supervision and probably under the command of a native officer who in his generation had learnt his profession under similar disadvantages. Moreover, such a concentration as is here suggested would admit of a blow being struck with effect in any direction in which we might find ourselves menaced.

To strike effectually, we must strike quickly; having secured a reliable and formidable force we must be able to transport it to any given point with certainty and rapidity. Communication in Assam is almost entirely by water.

Two steamers should at all times be at the absolute disposal of the Chief Military Authority, such steamers being altogether separate from, and independent of, civil control. The usual position of one of these steamers would be at Chattuk on the Surma to the south of Shillong, the second at either Gowhatty or Debrooghurh on the Brahmaputra, as circumstances might seem to require.

These steamers with their flats would be capable of transporting at a moment's notice a force of about 500 men fully equipped for service, with say two mortars and rocket cradles and their mule transport. Moveable columns should at all times be in a state of preparation at Buxa, Shillong, and Debrooghurh.

The personal equipment of the troops should be especially and stringently regulated on this frontier, Officers and men being accustomed to look upon tents as superfluous encumbrances, a kookerie or its Assam equivalent, a dhow, being supplied to the troops and attached to the waist belt, the bivouac being naturally adopted to the country. From Shillong, the Head Quarters of the Force, the General would at all times be able by proper transport arrangements to have the force above indicated on board at Chattuk and under weigh in 48 hours from leaving quarters; heretofore the opportunity for striking has always been lost owing to the time required to obtain transport and equip the force. These steamers could be utilized for the service of Government, whenever the General considered that their services could be temporarily dispensed with.

It is of vital importance that the most cordial relations should exist between the Chief Civil and Military authorities. The Military Force in Assam has always been supplemented by a civil Contingent of Police, but possessing a *quasi* military organization, and performing duties of a military rather than civil nature. To such an extent has this been the case, that it has happened that the Civil forces have been engaged on Military expeditions against the neighbouring tribes without the privity of the Military authorities; a more pernicious system could not be imagined than to permit a partially drilled semi-military body, under unprofessional guidance to involve itself and the Government in military operations. If, as is here proposed, the military force on the frontier is concentrated, the posts vacated being occupied by Police, no reduction in this force will be possible, but as long as it retains its Military organization and is employed on military duties it should in these matters be directly subordinated to the Chief Military authority.

Divided counsels are at all times bad but in Military operations a system of divided responsibility and command inevitably leads to disaster.

These are some of the ideas I formed during two and a half years' service on the Eastern Frontier and in Bhootan. I do not claim for them originality, or that they offer any panacea for our troubles, but I think they point out the way to render our position there secure and one of right, rather than of sufferance.

*P. S.*—I take it for granted that the Eastern Frontier now possesses uninterrupted telegraphic communication between at least all the principal stations, if not, no further delay should be permitted in completing the lines without any regard as to whether they are likely to pay commercially.

S. N. S.



## VI.

**Pioneers.**

FROM the days of the re-building of Jerusalem under Nehemiah, by whose direction "they which builded on the wall, and they that bare burdens, with those that laded every one, with one of his hands wrought in the work, and with the other held a weapon," down to the present day in this country, when the villagers on the North-Western Frontier may be seen ploughing their fields, with matchlocks slung over their shoulders, or lying near them, handy in case of a sudden attack, men have often been compelled by circumstances to combine the duties of laboring and fighting. In many a campaign the work required of soldiers is as much that of laborers as that of fighters, and men trained to the use of pick-axe and shovel as well as of sword and rifle are then invaluable. But, though the training of soldiers to the use of arms is always carried on in time of peace, training them to the use of working tools has too frequently been left till the necessity arose for their use in time of war. This is a point which appears lately to have been occupying a good deal of attention among military authorities in different parts of the world, and Pioneers are springing up in the armies of many nations. Various systems are being tried, some of them being as yet only experiments. At the very outset the questions arise, how many tools are there to be? and who is to carry them? Russia sticking to her old system of uniformity gives every man a tool to carry. Denmark gives one to each file. Prussia has her special battalions equipped for the purpose. America has two companies told off by roster to carry the tools of each battalion, a sort of republican effort at equality, which is probably the worst plan of all. In the British Army there is as yet no arrangement of this kind, but that things are tending that way may be inferred from the introduction lately of the "Shelter Trench Exercise," which is a step in the same direction. England certainly has her Corps of Royal Engineers, but there appears to be this distinction between the men of that Corps and Pioneers proper, that the Royal Engineers are skilled artisans and laborers, who are armed that they may defend themselves if attacked; while Pioneers proper are soldiers who carry and are trained to the use of working tools, in order that they may thereby render themselves more efficient as fighting soldiers. The same difference exists in an even greater degree between the handful of men called Pioneers, who are attached to each battalion of British Infantry, and the Pioneers now spoken of.

Though England has no British battalions of Pioneers, yet she has, and has for some years had in the Indian Army, two regiments of them, and it is possible that a few notes on their origin, the class of men of which they are composed, their equipment, pay, and services may not be uninteresting.

The two regiments are the 23rd and 32nd Regiments of Punjab Pioneers.

Both these regiments are composed chiefly of Muzbee Sikhs. The true Muzbees are a race of men descended from a low caste Hindoo, who for services rendered was admitted to the Sikh religion by Gooroo Govind, the chief of that faith ; but there are many Muzbees, converts of the present day, who cannot claim descent from Jewun Singh, the progenitor of the genuine Muzbees. Though nominally admitted to the brotherhood the Muzbees are still looked down upon by the pure Sikhs, and indeed, setting aside their low origin, their character is seldom such as to command respect, but they make good soldiers and take kindly to hard work or hard fighting. When not on active service in the field, or kept steadily at work, they require to be held in with a tight hand, for they are otherwise apt to fall back into the vicious and criminal ways that appear to be natural to them. It was a Muzbee who first introduced "*Thuggee*" into the Punjab, and Muzbees always formed the majority of those who indulged in the crime in that province. This fact led Mr. Brereton of the Thuggee Department, with a view to keeping as many of the class at legitimate work as possible, to propose in 1852 that a Civil Corps of Muzbee Pioneers should be raised for employment under the Engineer Department. Nothing seems to have come of the proposal till the mutiny of the Bengal Army in 1857, when such a corps was actually raised for service at the Siege of Delhi. This corps was afterwards embodied as a regiment and is now the 32nd Punjab Pioneers.

About the same time too the 15th, now the 23rd Regiment of Punjab Pioneers, was raised at Lahore from the same race.

The only other class, which enters to any extent worth mentioning into the constitution of these regiments is the Ramdassee. The Ramdassees are weavers by trade and in manners, appearance, and physique are very similar to the Muzbees.

Although frequently employed on Pioneer work it was not till 1864 that a regular Pioneer equipment was sanctioned for these regiments, and they were not fully supplied, the 23rd at any rate, with the equipment sanctioned till 1866. The 32nd, being then stationed at Ferozepore close to the Arsenal from which it was obtained, and being under orders for active service in Bhootan, received their equipment in 1865.

The following is what was allowed—

*Arms*—Smooth-bore fuzils.

*Accoutrements*—Brown leather.

*Working Tools*—

- 10 Hatchets
- 30 Pickaxes
- 35 Shovels
- 6 Felling axes
- 6 Saws
- 9 Bill hooks

} For each company, to be carried  
by the Non-Commissioned Officers and men.



|                                                      |   |                              |
|------------------------------------------------------|---|------------------------------|
| 20 Shovels                                           | } | In reserve for each company. |
| 20 Pickaxes                                          |   |                              |
| 3 Felling axes                                       |   |                              |
| 5 Hatchets                                           |   |                              |
| 3 Saws                                               |   |                              |
| 5 Bill hooks                                         |   |                              |
| 1 Set of blasting tools with proportion of gunpowder |   |                              |

Also files, rasps, vices and planes, etc. for the establishment of a blacksmith's and carpenter's shop in each company.

With a few alterations the above is the equipment now in use with the Pioneer regiments. The 23rd have since been armed with short Enfield rifles with sword bayonets, and *every* man is to carry a hatchet. Instead of the English spade the men carry the native "*phowrah*." All the working tools are carried in leather cases, the picks, axes, saws, and *phowrahs* being strapped on the back, (the helms of the latter detached from the blades and slung in loops outside the cases) while the hatchets and bill-hooks are hung on the waist-belt, and the dark lanterns are carried by the buglers, strapped to their backs.

Much time and care was given by various officers to devising an arrangement of straps for the tools, which should not cramp the movements of the men carrying them, and in reducing the weight of the arms, accoutrements, and ammunition, to make up for the additional weight of Pioneer tools imposed. Subsequent experience shows some slight alterations may still be made with advantage.

The average weight of Pioneer tools and equipment, which each man has to carry, is about 9lbs. To compensate for this, in some measure, the men are armed with short rifles instead of long, and the 40 round ammunition pouch with its shoulder-belt is done away with altogether,—thus cutting off about 5lbs. and leaving an unavoidable addition of about 4lbs. to the weight to be carried by each man.

The arrangement for the carriage of the pick-axes and *phowrahs* (*i.e.* of the majority of the tools) involves a small strap across the chest, which though it presses lightly is apt to interfere with free respiration. The straps for the felling axes and saws cross one another on the chest, and are therefore open to the same objection, in addition to which they are apt to cut into, or at least to rub, the neck of the wearer. To obviate these disadvantages, a set of straps might be used fastening by loops at one end to the tool at the back, coming over the shoulders like braces, and attached to the waist-belt at either side. These straps might be made so as to be lengthened or shortened, according to the size of the wearer, and according to the thickness of the great coat, or other articles folded on his back under the Pioneer tool. To prevent their dragging up the waist-belt in front, an ammunition bag, not a stiff clumsy pouch as at present, but a bag, might be attached on each side, just where the Pioneer straps would come, each bag to contain 20 rounds. This would

prevent the waist-belt from being displaced, and would give a much wanted increase to the ammunition carried. There is no doubt that 20 rounds is too little, and it has always been found necessary to issue an extra quantity, to be carried in the havresack, whenever there has been a chance of a fight. Even 40 rounds may seem too little, but, so long as 60 is considered a sufficient quantity for breech-loaders, 40 must be considered ample for muzzle-loaders. Of course, the weight to be carried would be slightly increased by this, but it might be again reduced by substituting the ordinary bayonet for the sword bayonet. The latter weapon is clumsy and inconvenient when in its scabbard; can have little, if any, superiority to the ordinary bayonet when fixed, and can scarcely be used as a hand-sword without throwing away the rifle. This last mode of using the sword has been adopted before now by certain native soldiers who are more accustomed to the sword than the rifle, but it is not quite a thing to encourage.

As regards pay, Pioneer corps are on the same footing as the other regiments of the Native Army. In the matter of working pay, when employed on Public Works, other than those purely military works, for which no special pay is given, they are also under the same rules as all other regiments.

The following are the rates of working pay allowed by present regulations for a day's work of from six to eight hours:—

|                               |     |     |     |           |
|-------------------------------|-----|-----|-----|-----------|
| Field Officers                | ... | ... | ... | Nothing.  |
| Captains                      | ... | ... | ... | 3 Rupees. |
| Subalterns                    | ... | ... | ... | 2 "       |
| Subadars                      | ... | ... | ... | 8 Annas.  |
| Jemadars                      | ... | ... | ... | 6 "       |
| Non-Commissioned Officers and | }   |     |     | 2 "       |
| Sepoys                        |     |     |     | "         |

There seems to be no particular reason for Field Officers getting nothing, or for Captains getting more than Subalterns; the work is in each case much the same, that of supervision. A uniform rate of  $2\frac{1}{2}$  rupees *per diem* for British Officers of all ranks would appear fairer.

For Native Officers a uniform rate of 8 annas a day seems advisable. They are frequently put to considerable expense for camp equipage, and in other ways when in camp at work, and there is already a great difference between the ordinary pay of the higher and lower ranks of Native Officers, which it appears unnecessary to increase.

But the most important change required is in the working pay of the Non-Commissioned Officers and men. Were two separate classes established, the second class receiving the present rate of working pay, and the first class something higher, it would be a great encouragement to the men to work their best, and it would afford their Commanding Officers the means of rewarding good workmen, which they have seldom an opportunity of doing now. About the only available reward for such men

under the existing system is promotion, and to promote a good workman is to take him from duties in which he is known to excel, and give him others in which it is highly probable that he will fail. Besides, there are so many other points to be taken into consideration in making a promotion—field service, good conduct, education, capacity for command, knowledge of drill, smartness, &c., &c.—that only an inappreciable percentage of good workmen could ever be rewarded in this way. To make a first class with superior pay need not cause any great expense. If half the Non-Commissioned Officers and men were admitted to a first class working pay of half as much again as the present rate, they would still be cheaper than ordinary laborers. But it is not necessary to go even so far as that. If Commanding Officers of the Pioneer corps were permitted to advance one-fourth of the men under their command to a first class working pay of even one-fourth as much again as at present, the object would in a great measure be gained—men would have an incentive to work hard.

The two Pioneer corps have done good service to the State in times both of war and peace. The 23rd served throughout the China campaign of 1860, including the capture of the Taku Forts and of Peking. In 1862, it was employed for about five months at work on the Hindustan and Thibet road in the hills north of Simla. This was the first regular Pioneer work on which the regiment was employed; but, though the men had not then the experience they have since acquired, their work was pronounced very satisfactory by the Engineer in charge of the road, by the Lieutenant-Governor of the Punjab, and by the Commander-in-Chief, Sir High Rose. In a pecuniary point of view also, it was satisfactory, the cost being calculated to be about two-thirds of what it would have been had ordinary laborers been employed, not to speak of the difficulty of obtaining laborers at all in any numbers in that part of the country. In 1863, the regiment was again employed for about six months in extending the same road; and in the autumn of that year it was marched straight from road making to campaigning on the North-Western Frontier, and did good service at Umbeyla. In 1867, during a cholera season at Peshawur, the regiment was employed in making and improving the roads to and about Cherat, and in developing the water supply for that station. A few months afterwards it proceeded to Abyssinia, and served throughout the campaign of 1868 in that country, a campaign which was essentially one for Pioneers, and on which the corps was of the greatest use in constructing the roads and the railroad, in putting up the telegraph, and in sinking wells. In the latter part of 1869, it was employed, first, for about six weeks, in improving and widening the Murree and Abbottabad road, and, afterwards, in opening out roads in the Agrore Valley in Huzara. In 1870, it again worked for between three and four months on the Murree and Abbottabad road. The saving effected in favour of the State by employing the Pioneers in place of ordinary laborers in the work on which they were engaged in 1869-70, was calculated by the Executive Engineer of Huzara to amount to close on 2,300 rupees. The regiment

is again at work this summer (1871) on the Murree and Abbottabad road, but, instead of getting fixed rates of daily pay, a special contract arrangement has been entered into, which gives about two-thirds of what is paid to ordinary laborers.

The 32nd Regiment has also done valuable service both in the field and on Public Works. It served with distinction in the mutiny, at the Siege of Delhi and at the Relief and Capture of Lucknow, on the North-Western Frontier at Umbeyla, and in Bhootan; and it has been employed in road making near Murree, and at Cherat, in mining for the tunnel under the Indus at Attock, and latterly in constructing the roads about Raneecket.

It must not be supposed that work has to be made for the Pioneer Regiments. All works on which they have been employed have been such, that had the Pioneers not been employed on them, they would have had to be executed by others at a greater expense to the State. The State also gains in another way, by having a training given to its soldiers in time of peace which is sure to be of use in time of war.

In conclusion, it may be remarked, that the idea, which many military men now hold, that every soldier should carry a working tool as part of his equipment, appears to be a mistaken one. Give every man a working tool, and every man will consider it a nuisance. But equip certain regiments specially as Pioneers, and those regiments will take a pride in their speciality, and will do all in their power to bring pioneering to perfection. Make more Pioneer regiments if you will. But stop somewhere.

Let there be some individuality, and individuality will beget *esprit de corps*, and with *esprit de corps* a regiment will "go anywhere and do anything!"

A. DUNLOP ANDERSON, *Captain*,  
23rd Punjab Pioneers.

Camp Gah, 13th June, 1871.

## LECTURE.

*Simla, Friday, the 14th July 1871.*

HIS HONOR THE LIEUT.-GOVERNOR OF THE PUNJAB IN THE CHAIR.

**On the state and prospects of the Indian Army.**

BY MAJOR ARTHUR CORY, BENGAL STAFF CORPS.

**WHEN** a nation extends its sway by permanent conquest over foreign countries, politically weaker or inferior in military skill to itself, one of the chief means of spreading its power and consolidating its empire is the employment of the conquered people, the direct appliance of their warlike material, their soldiery, to the purposes of the conquerors, the enrolment of the vanquished under the standards and the leadership of the victors.

This would appear to be a theoretical anomaly, but that all history proves it to be a general law, true of Rome and her legions, true of Russia, true of France in Algeria, and especially true of the conquest of India by the British.

There is no gradual intermixture and alliance of the superior with the inferior nation, no blending of common interests, no fusion of the different classes into a homogeneous body; the races thus bound together by a paramount power for military purposes in the cause of their own subjugation, are, and remain, radically opposed both to one another and to their rulers in all those conditions that draw men into the aggregates we call States.

Thus in character as in habits, in social observances as in tone so thought, in ethics as in the formulæ of creeds, the numerous Asiatic nations which have fought in our ranks with the one common object of our aggrandisement, are in antagonism each to each with a bitterness which can only be rivalled by that which they bear to ourselves.

What is the tie then? What are the forces which bind these heterogeneous, these hostile elements into a corporate power? resembling nothing so much as those marvellous compounds chemistry creates, which in the guise of bland oily fluid, or soft powder, await but the signal of release from the spell constraining them to resume their elementary shapes with the most fatal vehemence, and the most destructive violence of explosion.

The answer is simple. The tie is one of self-interest, the forces those that underlie the motives of all human masses, cupidity and fear.

In all States and communities a military element exists, varying however greatly both in quality and proportion to the population generally, from the maximum seen in nations which are, or have been almost exclusively armies, like the Greeks, Romans and Jews of the ancient

world, to the minimum as in those where it only appears in the guise of scattered bands of robbers, such as infest Greece of modern days, and not long since were common in Bengal proper.

The profession of arms in State military employ is an institution which has in all ages universally attracted the younger and bolder classes of all countries that have reached the stage of civilization, in which each individual is not forced to eat his bread by the sweat of his brow.

But when any such State is invaded and conquered by one greater and stronger than itself, this class, the soldiery, it is which most directly suffers; for the government which supported it has perished, and the revenues that supplied it have been diverted.

The husbandman may still labor with his plough unmolested, the artisan may still work at his wonted handicraft, for no wise invader will destroy sources of wealth that shall serve to enrich himself. But the soldier, knowing nothing but his trade of arms, can find no other means of subsistence, and therefore after a period of disbandment following the collapse of the power which maintained him, sheer necessity drives him to seek refuge from want in the only direction open to him, the transfer of his services to those who can alone afford to pay for them.

Besides this paramount motive there are other considerations, which soften the blow to his pride, patriotism or other susceptibilities he may have.

The love of getting the good things of life with comparative ease and indolence, and the love of successful fighting, are desires most common to human nature, and the man who has been accustomed to enjoy them will find many good reasons for seeking their continuance. Therefore if his late foe only can provide them, he will accept his services with very little demur. The conquerors, on the other hand, are glad to thus utilize the weapon to their hand.

Too few, or unsuited by climatic reasons for colonization, or to carry on by themselves the whole of the arduous duties which follow on the armed occupation of a country, they are willing enough to make their service attractive to the class whose numbers supplement their own advantageously either to keep order within their new territory, or to repress hostilities beyond it.

Thus the contract is made. But manifestly like all such contracts it will last only so long as the conditions which made it acceptable to both parties to it remain unaltered, and its terms are fulfilled by both. The relations are as between master and servant, and these would be speedily broken if we suppose the first, for instance, to be unable to pay the stipulated wages, or the latter to obtain obviously more favorable terms elsewhere. Especially would they be quickly broken if the servant had good cause to imagine that he could reverse the position and sit easily in his master's place. The tie of self-interest above alluded to

would be ruptured, the forces diverted, and the explosion would ensue. Therefore to use the word loyalty to express the obligation of the servant in this instance, attaching to it the meaning we ordinarily imply in speaking of the duty and affection we bear to our own country and sovereign, is to misapprehend the position completely.

These arguments may appear too trite to be insisted on, but as it is on the simplest elements that the foundation of all matter rests, so on these truisms depends the accurate comprehension of our real status and true policy in India, and a contemplation of these brings us face to face with the circumstances attending the Mutiny of 1857.

These are of the most vital importance to the subject we now pursue; from that event we date the birth of a new Native Army differing in many essential respects from the old one.

Between the old and the new a comparison should be fairly drawn. Whatever the faults and shortcomings of the former may have been, this should be remembered of it, that it flourished for a hundred years, and that during the whole of that period it fulfilled the terms of its contract well; its career was one of almost uninterrupted conquest. Fostered by conflict and inured to war, it grew from being a band of retainers in the service of a trading company, to be one of the finest and best appointed armies of its age. It fell by its very magnitude and its very excellence.

In its first rudimentary stage, the mercenary contingent which followed admiringly the path of conquest cut out by the extraordinary daring and enterprize of the Englishmen whose aggressive and acquisitive spirit founded an Empire when they sought only for wealth, was led and commanded by officers from their own ranks and clothed and armed after their own fashion.

It is curious that the first example of training native soldiers in the European discipline was set by the French, in raising and equipping five companies of sepoys at Pondicherry in the year 1746.

But it was not long before the hint was taken and the example followed; for in 1753 we find a force of 200 English sepoys under command of Ensign Smith, with forty Europeans and two guns supplementing a large Native Army from Arcot, allied to us, and opposed to the French, bearing the brunt of the action in the field.

The change in the system, thus placing the native contingent under European in lieu of native leadership, was one of most marked significance. It was that change which gave the best material of stability to our dominions, and which proved in the time of our trial our surest stay. For the European officers of the Native Army were as mortar to the edifice, and as nerves to the vital frame. With them were cohesion and strength, without them came disintegration and paralysis.

When this truth became established by experience and its importance gradually understood, so by degrees the number of European Offi-

cers to serve with the Native Army was augmented to keep pace with public opinion and the necessities of the day.

So efficient did the Army become by this means, and by the unremitting labor and attention bestowed upon it, that at length both in drill and discipline it became second only to the British Army itself, far superior to the troops of any native power beyond our frontier, and equal to the meeting in line at the point of the bayonet the troops of the only European power, France, we have ever confronted as foes in this country. Its value thus ascertained, it was made available to the utmost. No longer confined to the limits of India, it bore arms to distant countries in the name and in the cause of England, of whose military resources it thus became an integral and acknowledged portion.

Java and Egypt, Afghanistan and Burmah, attest the share the Native Army took in spreading the British power and prestige abroad.

Its small proportional cost, compared with that of British troops, was a great recommendation to its extended employment, and it is to this, one of its merits, that may be traced the commencement of the political blundering which led to its ultimate ruin.

For to this principally, aided perhaps by some unworthy jealousy on the part of the Imperial Government in England of the growth and increasing power of the Company, it was due, that from a subordinate position (*its proper position*,) from being merely a useful accessory, an adjunct to the main support of our dominion in the East, the Native Army swelled to a magnitude and was invested with an importance, out of all proportion to its original design.

In truth it dwarfed and overshadowed that which it was intended only to supplement and assist.

As province after province was gradually absorbed into our territory, so the Native Army was augmented by regiments and tens of regiments, while the English Army remained at best stationary, or was diminished to defray the expense of its rival's increase.

This did not take place without remark and remonstrance from many statesmen. Malcolm, Henry Lawrence, Sleeman, and others, pointed out the mischief which was surely growing. Ten years before the crash came, a far-seeing Governor-General was heard to mutter at a review, "I should like to see some more white faces behind those guns." But by most the danger was ignored, or selfishly considered to be too remote to require to be guarded against. It does not follow unfortunately, that because a fallacy is popular or even universal that it ceases to be a fallacy. But it is often irresistible, and the mistakes of nations are as common as the blunders of individuals, only more extensively mischievous.

And thus, in course of time, it came about that the Native Army grew, until to its sole charge was committed nearly all the Forts, the



Treasuries, the Arsenal, the Guns, the Cities, and the points of strategical value throughout the Empire, save in one, its remotest province.

Now this was distinctly a reversal of the conditions as between master and servant alluded to.

The following is a brief statement of the number and distribution of the British and Native Troops in the Bengal Presidency in the beginning of May 1857:—

### DISPOSITION OF BENGAL ARMY—1857.

| <i>European</i> |            |          | <i>Native</i> |            |          |
|-----------------|------------|----------|---------------|------------|----------|
| INFANTRY.       | ARTILLERY. | CAVALRY. | INFANTRY.     | ARTILLERY. | CAVALRY. |

#### FORT WILLIAM AND PRESIDENCY DIVISION.

INCLUDING 43 STATIONS.

|                         |                                              |      |           |                                                 |              |
|-------------------------|----------------------------------------------|------|-----------|-------------------------------------------------|--------------|
| 1 Regiment<br>53rd Foot | 1 Company<br>and<br>1 Horse<br>Field Battery | None | 14 Regts. | 7 Companies<br>and<br>1 Horse<br>Field Battery. | 2 Regiments. |
|-------------------------|----------------------------------------------|------|-----------|-------------------------------------------------|--------------|

#### DINAPORE DIVISION.

23 STATIONS.

|                                |                                         |      |           |                                           |                              |
|--------------------------------|-----------------------------------------|------|-----------|-------------------------------------------|------------------------------|
| 1 Regt.<br>10th Foot           | 2 Companies,<br>1 Horse<br>Lt. Fd. Bty. | None | 11 Regts. | 2 Companies,<br>1 Bullock<br>Field Batty. | 3 Regts.<br>and<br>4 Troops. |
| 4 Companies<br>of<br>Invalids. | 1 Bullock<br>Battery.                   |      |           |                                           |                              |

#### CAWNPORE DIVISION.

17 STATIONS, INCLUDING OUDE.

|                          |                                                 |      |           |                               |          |
|--------------------------|-------------------------------------------------|------|-----------|-------------------------------|----------|
| 1 Regiment<br>32nd Foot. | 2 Companies,<br>with<br>Horse Field<br>Battery. | None | 13 Regts. | 6 Companies<br>3 Field Batta. | 4 Regts. |
|--------------------------|-------------------------------------------------|------|-----------|-------------------------------|----------|

#### OUDH IRREGULAR FORCE.

10 STATIONS.

|      |      |      |           |      |          |
|------|------|------|-----------|------|----------|
| None | None | None | 10 Regts. | None | 3 Regts. |
|------|------|------|-----------|------|----------|

#### SAUGOR DISTRICT.

4 STATIONS.

|      |                                             |      |          |      |          |
|------|---------------------------------------------|------|----------|------|----------|
| None | 2 Companies,<br>2 Light Field<br>Batteries. | None | 5 Regts. | None | 6 Regts. |
|------|---------------------------------------------|------|----------|------|----------|

#### TOTAL SOUTH OF MEERUT.

|              |              |      |           |                                |           |
|--------------|--------------|------|-----------|--------------------------------|-----------|
| 3 Regiments. | 7 Companies. | None | 53 Regts. | 18 Companies<br>and Batteries. | 14 Regts. |
|--------------|--------------|------|-----------|--------------------------------|-----------|

MEERUT DIVISION.

| INFANTRY. | ARTILLERY.                                     | CAVALRY. | INFANTRY. | ARTILLERY.                  | CAVALRY.     |
|-----------|------------------------------------------------|----------|-----------|-----------------------------|--------------|
| 2 Regts.  | 2 Troops H. A.<br>3 Cos. with<br>Lt. Fd. Bats. | 1 Regt.  | 16 Regts. | 2 Light Field<br>Batteries. | 2 Regiments. |

GWALIOR AND CENTRAL INDIA CONTINGENTS.

|             |      |      |           |             |          |
|-------------|------|------|-----------|-------------|----------|
| 16 STATIONS |      |      |           |             |          |
| None        | None | None | 15 Regts. | 5 Companies | 5 Regts. |

SIRHIND DIVISION.

|              |                                                    |             |          |               |          |
|--------------|----------------------------------------------------|-------------|----------|---------------|----------|
| 12 STATIONS. |                                                    |             |          |               |          |
| 4 Regts.     | 2 Troops H. A.<br>and Head Qrs.<br>& 1 Baty. F. A. | 1 Regiment. | 8 Regts. | 1 Troop H. A. | 4 Regts. |

LAHORE DIVISION.

|              |                                       |      |           |                                       |          |
|--------------|---------------------------------------|------|-----------|---------------------------------------|----------|
| 13 STATIONS. |                                       |      |           |                                       |          |
| 3 Regts.     | 3 Troops H. A.<br>and<br>7 Cos. F. A. | None | 11 Regts. | 2 Troops H. A.<br>and<br>3 Cos. F. A. | 5 Regts. |

PESHAWUR DIVISION.

|             |                                       |      |          |                    |          |
|-------------|---------------------------------------|------|----------|--------------------|----------|
| 11 STATIONS |                                       |      |          |                    |          |
| 3 Regts.    | 2 Troops H. A.<br>and<br>6 Cos. F. A. | None | 9 Regts. | 1 Company<br>F. A. | 6 Regts. |

SIND SAUGOR DIVISION.

|             |      |      |          |                                     |          |
|-------------|------|------|----------|-------------------------------------|----------|
| 7 STATIONS. |      |      |          |                                     |          |
| 1 Regt.     | None | None | 9 Regts. | 1 Troop H. A.<br>1 Company<br>F. A. | 2 Regts. |

BURMAH.

|             |      |      |         |      |      |
|-------------|------|------|---------|------|------|
| 5 STATIONS. |      |      |         |      |      |
| 2 Regts.    | None | None | 1 Regt. | None | None |

PUNJAB FORCE.

|      |      |      |          |          |          |
|------|------|------|----------|----------|----------|
| None | None | None | 5 Regts. | 4 Batta. | 5 Regts. |
|------|------|------|----------|----------|----------|

GRAND TOTAL.

|           |                |          |            |                                                                              |                             |
|-----------|----------------|----------|------------|------------------------------------------------------------------------------|-----------------------------|
| 18 Regts. | 6 Troops H. A. | 2 Regts. | 127 Regts. | 4 Troops H. A.<br>18 Cos. F. A.<br>(Regular)<br>17 Bats. F. A.<br>Irregular. | 44 Regts.<br>of<br>Cavalry. |
|-----------|----------------|----------|------------|------------------------------------------------------------------------------|-----------------------------|

Thus in the extensive territory from Agra to the sea in a south-easterly direction the entire European force at our disposal was under two thousand men, the Native Army being at least sixty thousand. North-west from that station to Peshawur, the British numbered twelve

thousand to eighty thousand of the Native Army. The extraordinary disproportion drawn in these figures, especially in the Lower Provinces, would be truly ludicrous, but that it was so unhappily tragic.

Was it surprising, that it was said of us in some of the Native despatches intercepted after the outbreak, "The English Army is extinct." Assuredly, it was invisible. Was it surprising, that the Sepoy Army looking around, seeing no counterpoise to their own power, recognising their strength as we had taught them to use it, and vain of their renown, should, forgetting or under-estimating the value of the European element in their constitution, imagine that what they held so successfully and so long for the English, they could hold as easily and as well for themselves?

As a matter of fact, not only is it easy to believe that they should think so, but it was an opinion which prevailed largely in England when the news of the outbreak first arrived.

It was said there, "How strange that this danger was not always more clearly apparent, how culpably unaccountable that it did not stare the most self-complacent in the face." Such were the first exclamations of the popular voice.

Flying to extremes, as is the wont of that clamor, the prestige of our name, the moral force of our supremacy which we had so long over-relied on with impunity in India, which was in truth the only ground of reliance we had, was now ignored altogether in England, and the project of giving up the Empire and retiring from a hopeless struggle was gravely and publicly advocated by a respectable minority of the English Press.

Whence had come this mysterious power, the "prestige" that had sustained our rule so long, and which weakened the hands of our revolted subjects even in the first hour of their anticipated triumph?

It had been based upon the often-proved and admitted superiority of our fighting power over the people opposed to us. Upon that it rested. Upon that it would rest still.

But much as prestige can do, wonderful as its influence is, it is subject like any other force to be put to a practical test, and therefore, after we had neglected for many years to renew the sources of our substantive strength; when our growing numerical weakness became more and more apparent, was it astonishing, was it not certain, that as material tone waned, moral force should wane also? leaving us at last exposed to the attacks of those who saw in our failure their own natural and immediate advantage, and in our adversity their own certain opportunity.

This and this only was the cause of the Mutiny.

The annexation of Oudh on which so much stress has been laid was

the event which consummated the disastrous policy so long pursued, and which, when the train was fairly laid, precipitated the explosion.

A large kingdom, equalling in size the mother country of the invaders, teeming with an armed population, already supplying the bulk of the soldiers of our Native Army, was declared by a stroke of the pen a portion of our dominions, and we proceeded to display our title of conquest and to enforce our decree, by an addition, not to our British forces, but of some ten thousand men of the class we thus proclaimed our subjects, to the native troops, at whose interests and predilections we at the same time struck a decisive blow !

Surely, this was an extravagance of self-confidence, the very madness of arrogance.

But the evil did not rest here ; when the feeling of the Native Army became fairly apparent to the various sections of the entire community, all classes partook more or less of the spirit of the Revolution. Naturally, both Hindoo and Mahommedan dynasties, that owed to us their decadence, strove alike to profit by our misfortunes.

The descendant of a Mahratta freebooter, rivalled in fierce hatred and ferocity towards us the last representative of the long line of Moghul Emperors.

The Nana of Bithoor and the King of Delhi, opposite poles of the Native Confederacy, alike shared the murderous spirit that wreaked its savage animosity on women and children of the detested British.

Some independent States, foreseeing peril to themselves in the spread of anarchy and the thorough success of revolt, declared for us. Some others wavered, but of our own provinces there was but one on whose fealty we had any reason to rely. That was the newly annexed province of the Punjab, the province where alone, as we have seen, a visible proportion of British soldiers was present to maintain their right of conquest, and the bulk of whose population bore deep enmity to the classes arrayed against us.

With this one great fundamental cause plainly carrying on its inevitable work, it seems as inconsequential and absurd to dissect stories like that of the greased cartridges, or to discuss trivialities in the regimental routine of the Native Army, in the way of imputing to such things any effect in causing the Mutiny, as it would be to seek to determine the law of storms by gathering up and analysing the shattered fragments borne before the blast of the Cyclone.

These things were the waifs of the tempest, not its cause.

But one of the most extraordinary, and one of the most unjust inferences ever drawn hastily from political events, was at one time deduced from those of 1857, in attributing those dire phenomena to the European officers of the Native Army, charging them with having wrought the calamities by their relaxation of the bonds of discipline, and having

by a neglect of their duty permitted their influence with their men to decline, the truth being that they had done their duty all too well. It was due mainly to their efforts, to the admirable organization, and the very state of efficiency to which they had sedulously cultivated it, that the Native Army owed its sense of power. An inferior force would have been less dangerous, less to be dreaded.

Can then the Native Army be too efficient, too carefully trained to excellence? Undoubtedly it can, for our interests, IF we have no counterpoise to its strength, for then we ourselves put the servant into the master's seat. The confidence of the sepoys in their own training and skill in arms, taught them by their British officers, was at the very root of the movement.

Putting this out of sight for a moment and also the consideration, that had there been any ground for the calumny that, as a body, the officers neglected their relations with their men, the Government more than the individuals would have been to blame; the whole history of after events goes to prove the direct converse of such a supposition.

Notwithstanding the extraordinary temptation that possessed the Indian soldiery to revolt, the apparently inevitable certainty of success if they were unanimous, so thorough was the hold, so marvellous the influence of those officers over the men, that in very few instances was Mutiny complete, in most it was hesitating and timid, and in some it was altogether quelled by that influence alone; and this was so in garrisons where the native soldiers were to their English officers as a hundred to one, where in the midst of a hostile population the latter were as rain drops to the ocean, and where there was no let or hindrance under God's Providence to unamenable rebellion but the personal ascendancy of the men who were once so maligned.

Take a single instance, that of the garrison of Saugor, Central India. Purely native (excepting about twenty artillerymen), isolated at a great distance from the possibility of European re-inforcement, it was plain and certain, that months must elapse before the troops if they mutinied could be disturbed or attacked.

A neighbouring State, Jhansi, was in the first flush of successful revolution. What was it then that kept this great majority of the Saugor garrison true to their foreign masters, but that personal ascendancy which was so curiously under-rated, and so gratuitously vilified at the very time it accomplished so much.

There was literally nothing else. But besides the active force thus exercised by the ten English officers over the thousand sepoys, there was a negative influence which was still more potent, and that was the loss to the Native Army, when it mutinied, of the leaders whom alone they were accustomed to obey.

These could not be replaced, for habit is to command what it is to obedience. The sense of responsibility suddenly imposed is certain

to perplex the unaccustomed mind. The doubtful hesitating command is sure to be disobeyed. Distrust of themselves was so palpable amongst the Native Officers who tried to lead the rebels against us, that a consciousness of their unfitness for authority quickly pervaded their followers, and desultory and uncombined effort was the final result.

If we suppose for a moment, that our Native Army had been from the first officered wholly from their own ranks ; that the victories they had achieved, though gained side by side with European troops, had still been won under native leaders who had acquired the experience and influence of command, can we doubt that the mutiny of 1857 would have assumed far more formidable dimensions ?

The idea, not unknown to us, that it is our duty voluntarily to renounce our own interests, by deliberately placing ourselves at a disadvantage with inferior and hostile races, for their benefit, in giving them that experience and influence of command, may without argument be relegated to the limbo of shams with which plain practical common sense has nothing to do.

Taking for granted, therefore, that we desire to keep our Indian Empire for ourselves, though we would rule it to the benefit of the people ; taking for granted, that we want an Indian Army for our purposes and not for their own, the conclusion we are forced to is that its leaders should be ourselves, and that the English officer with a native regiment should be now what he was in 1857, our mainstay with that section of the force which maintains us where we are.

In that year the tide of rebellion was actually stemmed, if not turned, before a single English soldier of the re-inforcing army could share in the conflict. The advance of Renaud's detachment and Neill's column was made before the first instalment of the troops diverted from China could reach these shores, and successful as the after sweep of conquest was of Havelock and Lord Clyde, the first impulse of victory was given before they appeared on the scene.

And this was due under Heaven to the indomitable fortitude and courage of the English officers and men who faced the fierce danger first, to that spirit of heroism, which whether displayed in a solitary and individual instance like that of Frank Gordon of Abergeldie, who died alone at Jhansi after killing twenty-five of the enemy with his own hand, or that of a leader like Henry Lawrence at Lucknow, who animating every soul of his party with his own invincible resolution, forgot nothing that could serve his country, yielded nothing to its foes but his own life, can never be thought of surely without producing a thrill of admiration and pride which is almost reverence.

From these considerations we deduce, that the number of European officers with our regular Native Army was one of the elements in its constitution most favourable to our interests.

This view is further corroborated by the fact, that where the Irre-

gular regiments, *i. e.*, those officered by but four or five Englishmen only, did mutiny, they did so far more completely, and they were far more formidable adversaries than the Regular Army; more completely, because they were less under British influence, and they were more formidable, because they had a certain leadership ready to their opportunity.

The Gwalior Contingent and the Oude Irregular Force are instances in point; they rose unanimously and *en masse*, and the former achieved the only success the mutineers can boast of in the open field in the action before Cawnpore.

The Irregular Troops that did not mutiny were composed of classes already at bitter feud with those of the Regular Army.

The admitted efficiency and utility of the Punjab Irregular Force are often cited, to show that the system of employing only a few selected officers with native troops is a good one. It should be remembered, that no parallel circumstances are afforded in the position of that force, as compared with that of the old Native Army. It is in number a mere fraction of the latter, whose magnitude was a danger. It has been in existence but one-fourth of the time of the latter, whose age was a danger. It is not concentrated in overwhelming proportion in great cities, the foci of great kingdoms, like the latter, whose distribution was a danger.\*

It has never in fact stood, nor could it be expected to stand, in anything like the relation to the Empire at large, as that Army did to which it is compared.

In campaigns of any magnitude it has been invariably re-inforced in great proportion by the British troops, Goorkhas and native regiments of the line. This was the case even in the last unimportant expedition in Hazara; and admirable as the Punjab Force is, it is not on a scale which justifies reference to it as a standard in considering the present subject.

It should be remembered, that the systems which officered our Native line regiments was one of slow growth; it may be inferred that this growth depended upon the necessities shown by experience; that it was practically discovered that where five British were good in action, ten were better, and twenty better still; and thus in fact from what was originally the "irregular" system, the "line" system gradually developed; and to ignore the results of that very long and very practical experience, and to jump to the conclusion from reviewing the events of 1857, that because a regiment has few British officers it is better than one with many, seems like believing that the key stone of an arch is a defect of structure in a building whose foundations have been shattered by an earthquake.

In reverting then as we have done to a system we had outgrown, we are committing a grave error; one too, which if reasoning is not wholly at fault, lies on the surface.

That the presence of English officers with a native regiment is a positive and material advantage, (and it is difficult to comprehend how it can be otherwise) seems to be still allowed; inasmuch that in war the number of officers is always temporarily augmented as far as possible, that is to say, no sooner is the Native Army employed in its professed and normal avocation, fighting, than an approximation to the old line system is at once made.

But such augmentation, though better than nothing, is surely at best but a palliation of an evil which need not exist, and which we have created without any apparent object. It is obvious that the services of officers thus employed with strangers will lack some of the value which long regimental association alone confers.

Mutual respect, confidence and attachment between men such as may exist, such as do exist, despite of difference of creed and color, do not grow up in a day; that they are of the very first importance between soldiers and their officers, no military man will deny; and in any system which does not foster them, there are seeds of mischief which will certainly develop under natural and inevitable laws.

The old regimental system did foster them, they abounded in the old Army; they could not, it is true, arrest the flood of the political events we have reviewed, any more than a breakwater can stop the spring tides; but when the waves of revolution broke over the land, they did much to fend the shock and they saved many lives.

We have destroyed the regimental system, one which as we have seen grew out of practical needs, one which the experience of all nations has adopted as the best form for their military purposes.

With what have we replaced it? We have first of all diminished the strength of our most valuable materials, and we have next placed those diminished materials in such juxtaposition as shall afford them the least mutual support and cohesion.

Finally, concluding the comparison of the old Army with the new one. Supposing the latter were placed in precisely the same circumstances as the former. Supposing we were to reproduce now the political position we occupied immediately previous to the mutiny. Supposing we sent home to England two-thirds of our present force, and that we were to place in the hands of the *present* Native Army, the number of cities, forts and cannon then confided to the sepoys, does any sane man believe that a superiority of quality or of system now exists in the Native Army of the present, which would ensure the permanence of our Empire, not for a century, but for a month?

But if that superiority does *not* exist, then all arguments which base the rebellion on the defectiveness of the former Army fall to the ground; all the clamor which shrieked for change, any change, which cried out at the old beliefs, the old traditions, the old ways, "away with them," all this was a vain and empty clamor, and it would seem that instead of turn-



ing our misfortunes to account, dispassionately enquiring into their causes and calmly remedying the defects which gave them birth, we have rushed to hasty assumptions and to still more hasty remedies, and have now the task before us, first of removing the badly designed and badly executed portions of our late work, and then the re-construction of a fresh edifice.

If this is so we should not shrink from it now.

While it is impossible to suppose, that the number of English officers with native regiments might not be increased to at least the proportion formerly established in the old Indian Army with the very best result, it is not difficult to demonstrate, and it will be presently shown, that the European system of discipline, interior economy, and even drill, as practised in English regiments, may be very easily overdone, and that some valuable military qualities our present native soldiery possess may be "improved" out of existence, by a too rigid rule of thumb, which should seek to assimilate, too closely, systems dealing with dissimilar materials.

A spear is not more unlike a hatchet, than is the Asiatic soldier unlike the British private, and the rules of art to be laid down for the exercise of weapons differing so widely in make and temper, cannot properly nor usefully be the same.

Therefore it would follow, that the British officers with the Native Army should have some special training and education for that work, in other words, that they should be appointed young, and brought up to their particular vocation as for any other profession.

This is again but a truism, one universally acknowledged in every trade and calling which men follow.

It is however, necessary to bring it forward, when we find in dealing with our present subject, this, as well as most other truisms, systematically ignored or even derided.

It will be remembered, that one of the chief points vulnerable to the reformers who most persistently attacked the old system, and one which was always most vehemently denounced by them, was the filling up of the appointments on the staff (including in that term all the various employments other than regimental the necessities of the State demanded) from the officers of the line regiments. The evil was argued and dwelt upon, that must necessarily arise from the paucity of officers with their regiments (although in no instance was the number ever reduced to the present maximum;) the disadvantage of tempting the most promising officers with a regiment, to leave it for a more lucrative and advantageous career in other directions, was forcibly brought forward, commented upon, and inveighed against. No system could be worse, it was said, and there was enough truth, and more than enough plausible sophistry in addition, to reduce its defenders to plead necessity as its chief excuse, and to point to the other available source of supply for the demand.

It might be argued here, perhaps, that after all this well abused system worked out practically very well, and that where, as in its case, a measure is the result of plain and urgent need, it is generally far better in all respects than any evolved from theory. But passing that by, we find the only provision in the new system for providing officers for the future Indian Army, repeats the evil of drawing them from other regiments.

Henceforward, it is from the British regiments that the supply is to be drawn !

It may be said that the vacancies so created are filled up at once and so the regiment does not suffer, but it has never been proposed to add to the establishment of officers, or even to attach temporarily an additional number of young officers, destined from the first for the Indian service, to supply the drain. It is to be drawn, *i. e.*, deducted from the present regimental establishments, and thus we have at best, untaught youths constantly supplying the places of men who will be removed just as they become efficient ; and, if the design were ever really carried out so completely as to fulfil its avowed object, the regiments would become so many schools for young men wherewith to spend a certain term of their education, and with which in all other respects they would have no concern nor interests, and the young officers of every British regiment in India, instead of being brought up to take a pride in it would be unhealthily stimulated to seek their advancement elsewhere. That this system can be other than a mistake, as far as these regiments are concerned, (and these regiments constitute the back-bone of our power,) is scarcely conceivable.

But there are already certain signs that the number of officers so provided will be greatly insufficient. Already the younger grades for the Indian service are showing gaps in their ranks. Of Major Generals and Field Officers we have abundance, but we miss a large proportion of the youngsters who are certainly *as* useful in their way.

It will be answered, perhaps, that already the applications for admission into the Staff Corps are more numerous than can be complied with, and that there are not sufficient appointments to afford employment to the members of that corps as it stands. That may be the case at present. If so, it is partly owing to the reduction of the European element with the Native Army which we deplore, and partly to the great preponderance in number of the older officers, who are many of them filling situations better fitted for younger men.

It is for the future that no adequate provision is made.

The question is, whether the preparatory school training in a British regiment is so important a part of the education of an officer, desirous of serving for the rest of his career with the Native Army, as renders it advisable to overlook the evil which will ensue ?

Will the new plan give us better officers than we have had ? It will be surely, a list of names brilliant indeed that shall eclipse in the

future, those which the old Company's Army formed and which are inscribed in the scroll of Fame.

If a Native regiment be a bad school for a young officer, then some of our most distinguished soldiers have contended against a singular disadvantage. Let us suppose then the Native regiments of the future so officered that there shall be two English officers, a Captain and a Subaltern, to each company, the present complement of Staff Officers, a Major and a Lieutenant Colonel—let us suppose that these officers have served with their regiments from boyhood, that in each and all is an intense *esprit de corps*, a pride in its renown, a strong attachment to, and a lively interest in their men, that the older officers are veterans grown grey in war and experience with their soldiers. In the name of common sense would such an organization be a bad one ?

Yet, that was what we had before. Again let us suppose that these native regiments were invariably brigaded with a proportion of one to three of English regiments, taught to vie with these latter in all true soldierly qualities of spirit, bearing, and discipline, that the officers of both were encouraged to contend in noble emulation to excel in all the branches of skill, attainments and accomplishments of their mutual profession, that instruction practical and theoretical were systematized, that large bodies of troops with natives were habitually massed at points of strategic importance, and carefully and sedulously trained together in tactical operations on an extensive scale ; that the combination of the various arms was made a subject interesting and instructive to every officer and soldier, European and Native, by constant and intelligent exhibition ; that the practice of isolating Native regiments for police purposes in out-of-the-way solitary stations, was utterly done away with ; in short that the combined Army of India was kept like a good sword, at the highest pitch of temper, polish and sharpness ; *then* we should have what we had not before, and mutiny to such an Army would be as impossible as defeat.

A question next arises of the Staff requirements of the Army of the future. It will be necessary to discriminate these, from the various offices now held by Military men in departments of the State unconnected with the Army in any way. Permanent employment in a civil capacity should be erased from the list of appointments to which regimental officers, as such, are encouraged to aspire.

The Army Staff may properly include only those departments that are indispensably connected with the Army, and the tenure of all these appointments to it should be terminal at fixed periods. If the Commissariat, for instance, be still retained on the Army Staff, it would be of benefit that the experience gained in it should be diffused among the regimental officers generally ; the Judge Advocate's Department might follow the same rule ; so with Cantonment Magistrates, and in fact where the duties, though civil in their nature, are still inseparable from, and owing their existence to, the Army, they would be advantageously

performed by officers who could not be, and should not be, permanently separated from their regiments for the rest of their lives. The Adjutant General's and Quarter Master General's Departments would remain subject to the present rules.

Where however strong personal bias, special gifts and attainments, or marked qualification single a man out for a political or purely civil career, permission might be granted to such an officer to retire from his regiment altogether by appointment to a Staff Corps established for that especial purpose, his place being filled up and promotion made in his room. This list of Civil Staff would include all employments, as Supervisors of Forests, Inspectors of Education, the Civil Commission, the Revenue Survey, and all posts not directly connected with Military affairs.

There would be as at present, two careers open to the young officer, each with its own incentives to ambition ; the one purely professional, in which whatever Military Staff avocations might be found for him, he would be always a regimental officer, the other unprofessional, in which the individual selecting it on leaving the Army should no longer stand in the way of promotion of those with whom he has practically severed his connection, but become and remain of a separate class having its own proper pursuits, grades and ranks. Thus there would be no clashing of interests, no heart-burnings at superior good fortune.

All Army Staff as described, being appointments held for a limited period, each officer not absolutely disqualified, would at one period of his service hold one at least, and the class distinction as between the regimental and the Staff Officer, of which we have too much, would disappear.

The eliminations of all nominees to the Civil Staff from the regimental lists, would tend also to check the over-retardation of promotion, which was one of the greatest drawbacks to the old Army. The purely military element in the community would thus too become concentrated, and the Army would have a compactness, a solidity, and a coherence to which it is now a stranger. The dissemination of special experience amongst the entire body of regimental officers, all of whom will at one time or another have served in one or more departments of the Staff, would do much to enhance the value of their services to the country and to elevate and enlarge their professional ideas.

Reverting to the primary importance, that the education of the officer who is destined for service with Native troops should be special, and adapted to the peculiar requirements of his position, the instance of the old Native (Regular) Cavalry may be cited.

From a want of discrimination in the method of adapting a system to the materials given, partly in fact to ignorance of the nature of the materials with which they were dealing, a very great mistake was perpetrated in the construction of this force by those who formed it. The Indian Light Cavalry under Native leaders, and with an organization, equitation, and exercise of arms peculiarly their own, has been for a very

long historical period known as a highly valuable and efficient force. The Rohillas, descendants of Puthans who overran and colonized Rohilkund, were as famous on the side of the Mahomedans, as the Mahrattas of Central India on the side of the Hindoos, for excellence in horsemanship and skill with the sword and lance.

In some essential respects it may be doubted if European Cavalry in any age has equalled the Indian.

This arm has always been a favorite with Asiatics whose greatest battles have been won by its agency.

The biting and instruction of the horse, the shape and materials of the saddle, and the lightness of hand and sharpness of blade of the rider, were for purposes of personal combat, whether singly or in bodies, as near perfection as could be attained. It is nothing to the purpose, no argument to the contrary, that they have been defeated by British troops, for moral causes are as powerful in deciding a battle as physical, and the Asiatic is, as a combatant, inferior to the European. As before pointed out, this fact is at the bottom of our presence here at all. Whether it arises from superior courage, or strength or stubbornness, or a combination of all three, matters little, the fact is incontestible and uncontested. But the skill is, (or was), also as a mere matter of physical excellence quite as incontestible.

In any case the attempt to educate away that excellence and to substitute a system, which was assuredly inferior having regard to the material, was fraught with mischief.

We could not give the Rohilla nor the Maharatta the stubbornness in fight or whatever the moral quality may be which wins, so we blunted his sword, we changed his sharp bit for one with which he could not hold his horse, we took away his broad pad of a saddle to which his spare limbs naturally clung, and we put him on a hard slippery angular contrivance in which, though we could succeed in teaching him to balance himself, he never rode; and in short, we very soon metamorphosed a useful and efficient Cossack into the ludicrous travestie of an English Dragoon. War, the stern teacher, speedily pointed out to us the mistake we had made, and therefore though we still kept up a system shown to be wrong, we raised a much larger force of Cavalry, retaining many of the admirable points of the native organization and equipment.

This was designated the Irregular Cavalry, and as to the fitness of that force for its purposes there will be no dissentient voices amongst those who have ever served with it.

There are now however indications that the tendency to anglicise (*i. e.* to level to a certain British standard, admirable with British soldiers, but in many respects unsuited to Asiatics,) all details of Military organization is still at work in a wrong direction, and that this tendency

will, unless checked, render the Indian Cavalry of the future again a bad imitation instead of a useful and efficient original.

To illustrate this let us take the instance of equitation alone.

Regard must be had to the difference in size and weight between the Englishman and the Asiatic. The former trusts much to his strength, the latter wholly to his skill and address; the one trains his horse like a hunter, the other cares only to gallop in a circle of which his spear point is the immoveable centre. The English trooper's charger is taught to extend himself, the Native horse is ever thrown on his haunches. Our Veterinary Surgeons tell us that, this last system ruins the horse's hocks, but no native would think a spavin a serious drawback to the value of an animal trained to carry his rider to the left hand of his foe with the wheel and dash of a hawk; and from his point of view he is right.

Who that has ever seen a Rohilla, weight six stone, handle his horse at the native sword exercise, with a touch on the rein that would not move a weight of half an ounce, could ever dream of putting him for improvement into an English manege.

Perhaps a necessary evil, certainly an invariable accompaniment of all military pageantry, is an over-attention to points of mere display. Periods of peace are so much longer and numerous than those of war, that men are apt naturally to study the attractiveness of appearance which recommends in the former, than the severely useful requirements of the latter.

But it is well ever to bear in mind, that it is for war and not for peace that armies are raised and maintained, and the standard of excellence for Light Cavalry should be the celerity and order in which it can be moved at the inspiration of its commander, to that place in the field whence its swoop on the enemy can be most effective, rather than the trueness of its line in passing in review, the rhythm of its horse's feet as they trot past to a jingle of spur and bridle, or the acuteness of the angle at which the horsemen's cap can be placed at the side of the head without falling off.

With regard to the Native Infantry the present material is on the whole superior to the former. A large proportion of it is now recruited from the North-Western Frontier, and the tribes from which it is drawn are more essentially warlike in character, possess greater physical strength, and are far less hampered for military purposes by caste habits and prejudices, than the class which they have to a great extent replaced. Their drill is now more simple, and more practical than it formerly was, and their dress and arms are improved and improving.

The present arrangement of mounting all the European officers with a Native Infantry regiment is not a good one, and in the event of any increase to their number, it would become of course more inconvenient than at present. In war, especially in hilly countries such as we may

anticipate, foot soldiers should be mainly and immediately led by officers also on foot. The number of mounted officers provided by the regulation of the English Army with an Infantry regiment is ample for all practical purposes.

But the point of most importance now to be regarded is, perhaps, the inculcation of the maxim that it is by combination that the successes of all arms are achieved, the insistence on the fact that regimental drill and organization have for their main object the establishment of the value of each individual corps, *not* as an unit but as a component particle of a great machine.

The regiment is most valuable to its brigade, that brigade to its Division, and that Division to its Army, which possess the greatest mobility, the greatest power of swift and intelligent conforming to the tactical plan of the whole.

As a rule the zeal of the regimental Commander is more conspicuous in a somewhat exclusive study and cultivation of battalion drill, than in the far more essential practise of the exercise of large bodies.

How often one hears it said that Field days rather tend to unsteady soldiers than to improve their drill. But this is the very strongest argument that can be used in favor of Field days, that they should be repeated until they do not unsteady the soldier, for however well-drilled a regiment may appear to be on its own private parade ground, if it is not equally steady when brigaded with other troops its efficiency for service is manifestly imperfect.

And this is yet another argument for increasing the number of European officers with every native regiment.

Few native officers have the power or the habit of mind necessary to apply a knowledge of parade movements sufficiently rapidly and skillfully, to render them reliable in the execution of combined field manœuvres on an extensive scale, nor is it advisable that they should have them.

Finally, to sum up in one comprehensive view the necessities which appear to belong to the position of the Native Army of the future, we would state them briefly as follows. The furtherance of British interests will be best accomplished by the infusion of the British element into its composition in the largest possible proportion, the larger the better. The re-establishment and the constant fostering of an *esprit de corps* in the class, the body of English officer so devised and created, that its career, its interests, and its ambition shall be bound up with and inseparable from the Native Army it is destined to lead, will be as before the surest basis for the permanency of our power; and the training of that class not only in the principles of its profession but in the special knowledge which its duties render imperative, will be the most certain guarantee that the purposes for which our Native Army is called into existence

*viz.* the extension of our Empire and the maintenance of our renown, will be adequately fulfilled.

His Honor the Lieutenant-Governor then moved a vote of thanks to Major Cory for his interesting paper, and the meeting was adjourned till Wednesday, the 20th July 1871, to enable Members to prepare for the discussion on the important subject of his paper. A report of this discussion will be published in the next number of the journal. Meanwhile opinions are invited from Members at a distance.

---



## D E B A T E .

---

ON the 13th June 1871 a meeting of the United Service Institution of India was held at Simla. At this the following were read by the Secretary. The lecture on the "Education of Staff Officers," delivered in the Theatre of the R. U. S. Institution in London, by Major Alfred Jones, v.c. Extracts of the Reports of Baron Stoffel's Reports on the Prussian Staff, published in the *Times* in March 1871. As several members expressed a wish to make some remarks on the subject before the meeting, and the lateness of the hour did not permit of their doing so then, the meeting was adjourned till the 20th June, 1871. When Major O. T. Burne, addressed the meeting as follows:—

I have no right to occupy much of your time by expressing lengthy opinions on the important matter which we are invited to discuss to-day, the "Education of the Staff Officer." It is however a question on which all Military Officers must take great interest, and I am therefore anxious to say a few words on the subject.

I confess to a feeling of disappointment in reading Major Jones' lecture, because however ably his arguments are put, they merely amount to a defence of the Staff College system, and do not therefore in my opinion treat this question on sufficiently broad grounds.

For myself I rather hesitate to accept the belief that Staff Officers in order to become perfect, can be educated only at Sandhurst.

There is much good sense in many of Major Jones' remarks, and it is only natural that he wishes us to accept the present Staff College system (in which he takes a prominent part) as the one and perhaps the only one by which we are to attain that perfection which he thinks to be so desirable. I venture to disagree however to some extent with that system, and would briefly explain my reasons for doing so.

Gentlemen, as regards the Army, we are somewhat a nation of theorists; we are not practical. Let the matter be Control, Camps of instruction, or anything else, we have never been able to organize, nor fairly grapple with, either the constitution or management of our Army, nor what is to my mind still more important, the education of our Officers.

What are our requirements as to the education of Staff Officers, and how does our present system meet them?

Our requirements are really simple. Perhaps many of you may agree with me that the essential ground-work for a good Staff Officer is that he should be, speaking in general terms a gentleman, a bold rider, active in his habits, of calm temperament, a fair linguist, able to sketch, survey, write a good hand, and compile a report.

As Sir G. Wolesley, in fact, has truly said in his little book recently published, "A man who cannot bear fatigue, who is not of active habits

"and who cannot ride well, is useless as a staff Officer. Being a good sportsman, a good cricketer, good at rackets, or any other manly game is no mean recommendation for Staff employ. Such a man, without book lore, is preferable to the most deeply read one of lethargic habits. The worst Staff Officer I knew in the Crimea had taken the highest degree in the Senior Department at Sandhurst. I do not wish to insinuate that learning is injurious, but to prove that scientific attainments alone can never make a good Staff Officer," Major Jones also points, in his Pamphlet to some similar essentials, that must necessarily be found in a good Staff Officer.

He infers, as far as I understand him, firstly that a bad Regimental Officer can never make a good Staff Officer; secondly, that more practical training in the field is required; and thirdly, that the essential element of riding requires more consideration than has been hitherto given to it.

Now Gentlemen, conscientiously agreeing as I do with Sir G. Wolesley, and in what is I believe inferred by Major Jones, in regard to the *sine quâ non* for the selection of a Staff Officer, I wish to show briefly how our present system seems in my humble opinion, to fall short of what is really necessary.

I had the pleasure of reading the other day the Staff College Examination Rules for this year. Although there is a marked improvement in them as compared with the rules of former years, yet I believe them to contain more theory than practice and not to be calculated of themselves to turn out the kind of Staff Officer we require. The rules read well, and comprise much that is valuable, But taking the Entrance Examination alone, it is too much one of book competition, without sufficiently practical tests of the candidate's fitness for Staff employ.

The effect of this system tends to attract what we may call the bad just as much as the good Regimental Officer.

Let us for the sake of argument suppose that the good Regimental Officer is one who is a good sportsman, a good rider, who thoroughly understands his men, is full of *esprit de corps*, and whilst studying in his spare hours what he ought to learn, yet makes book lore subservient to activity; and let us suppose that the bad Regimental Officer is the reverse.

When it comes to one set of attainments being tested by competition book examination, and the other by certificates of little practical value, we may fairly suppose that book lore has the advantage in gaining an entrance into the College.

Again the course of education at that institution has of late years tended to a course of abstract subjects, which rarely serve us in time of need rather than to practical tests in the habits and duties which are necessary for a really good Staff Officer.

Camps of instruction are therefore much better Staff Colleges than those we possess under the present system; or at all events they should

be necessary appendages to the selection of Officers who are worth further education at a Staff College.

If the country is put to the expense of a College, the only just mode of repaying that expenditure is, by a few simple rules, to admit to it only those Officers who are by practical tests found likely to succeed as Staff Officers.

If Camps of instruction are conducted under properly organized rules, supervised by competent Officers, and attended by as many Officers of the Army as can possibly be spared, whether their Regiments are in Camp or not, [there need be no difficulty in ascertaining in a few months those who are capable of being good Staff Officers, who excel in riding, who are fond of active exercises, who are of powerful physique, who can sketch the surrounding country, who can compile a report or carry an order.

Any General Officer, in communication with Officers Commanding Regiments, and with little other assistance than a steeple chase course, a cricket ground, a lecture hut, a small sum of public money for prizes, for riding, sketches, or even reports, &c., and a few well-devised field days in which both Officers and men should previously be made to understand in published Camp Orders what they are going to do and afterwards informed what they have not done—I say, any General Officer ought to be able to establish a system, too simple to require description, by which he could test the capabilities of every Officer in Camp. Were a list of selected names recorded at the head-quarters of an Army at the end of each camp season, and selections made alone, except in especial cases, from that list for Staff employ or Staff College education, we should soon have plenty of good practical material for our Staff. But this would necessitate a change of system in the College itself. If riding and languages were put first and chemistry last, it might peradventure be an improvement. We should not insist either on such a long residence at the College, nor on such a difficult competitive examination at the end of it, nor on a three months' duty with some particular branch of the service to learn what takes an ordinary Officer many years to acquire, and then turn out what we imagine to be a ready-made Staff Officer. We should rather restrict the residence to a shorter period, form the College into a higher and lower branch, make the higher branch optional, but not allow any Officer to enter it unless he had been a year in the lower, and had subsequently served with his Regiment for a like period.

It is a mistake to pitch the compulsory education of a Staff Officer at too high a theoretical standard; but at the same time the optional study of *ologies* may do an Officer no harm as long as he be not allowed to waste too much time over them, or to sacrifice practical training in the field and in his Regiment on their account.

Gentlemen, not wishing to trouble you with too much detail, I have only touched lightly on this interesting question. I only wish now to sum up what I have intended to show, *viz.* that the basis on which we ground our estimation of Staff education is too high flown and theoretic-

tical, that the Staff College system is of less practical benefit to the Army at large than it ought to be, that Camps of instruction must be more attended to, and that when we hope them we must take care that such an organized system is established in them as will develop the knowledge, and draw out the merits of individual Officers, assist to educate the Army generally, and form a basis for such further education at a Staff College as may be deemed desirable, taking care that the Regimental and Staff system be not too much separated. No Officer, except actually on the permanent Staff, should be absent from his Regiment for more than a year at a time,—a period which is quite long enough for any one of moderate ability to acquire all the theories in the world that can be of any use to him or make him valuable as a Staff Officer.

If we keep such a system as I have roughly touched upon honestly in view, if we select our Staff Officers carefully and practically, if we turn off the bad ones instantly, and subject the good ones to periodical and practical tests during the whole of their career, we need not fear but that we shall have the best Staff Officers in the world.

Colonel the Honorable F. Thesiger :—

I consider the present system of competitive examination for the Staff College as radically faulty, for it precludes the possibility of ensuring that every Officer admitted is of the proper stamp to make a Staff Officer. It is I believe allowed that only two-thirds of the officers who through the college really turn out efficient Staff Officers, one-third of the expense of the college is therefore wasted. In my opinion entrance to the Staff College should be by pure selection, on the recommendation of the commanding officer of the regiment supported by the General Officer commanding one of the camps of exercise where the candidate's staff aptitude should be tested. Supposing that this preliminary test is passed successfully, he should then be subjected to a trial examination, so as to ensure that his knowledge of drawing, mathematics, &c., &c., is sufficient to enable him to take advantage of the special instruction afforded at the College.

The Staff College is a very valuable institution, but being so limited in its accommodation, every precaution should be taken to fill it with only such as have already shewn a marked capacity for staff employ.

A Staff College for officers of the Indian Army is much required, as at present no opportunity is given to them of studying the higher branches of their profession, and no officers are being educated to fill the numerous staff appointments required for the Army in India.

A Staff College alone however is not sufficient to make a good Staff Officer, it is in my opinion absolutely necessary that the regimental education should be continued at intervals, until he arrives at its highest position, the command of a regiment. Having exercised such a command for a certain number of years it may be assumed that he is thoroughly acquainted with the machinery of a regiment, and with the peculiar wants and requirements of the soldier, both in camp and quarters.

Every Staff Officer who has passed with credit through his five years of service in the staff should at once be sent to a regiment in a position befitting his rank and standing, and should not be available again for staff employ until he had served two years in such a capacity. By such a system the mistake of keeping an Officer continuously on the staff, until he had forgotten all the peculiarities of the regimental system, and had ceased to identify himself in any way with the individual soldier, would be done away with, and a close connection between regiments and the staff would be maintained, at present I fear that the latter are looked upon with no very friendly eye by regimental officers, and they themselves are but too apt to forget the temporary nature of their employ, and the real home in the regiment to which they belong.

The above remarks are especially applicable to the Officers of the Indian Army, who under the present organisation when accepting staff employ, cast off all connection with a regiment, and at the end of five years, find themselves without any permanent appointment, and with as very uncertain chance of future employment.

Such a state of things must be ruinous to the interests of the staff, as officers who have fixed appointments are naturally reluctant to give them up for the doubtful advantage of serving five years on the staff and then being thrown out of employ. The choice of Staff Officers for Indian appointments is therefore limited; and the army is consequently a sufferer, without an efficient staff no army can take the field with any chance of success, however perfect the regimental efficiency may be, more consideration would therefore seem necessary as regards the staff officer, even if it be at the expense of the regimental system. The staff is as the string which binds the bundle of faggots (regiments) together; if the string be rotten the faggots must fall asunder and their strength be lost.

Captain A. Crookshank :—

Valuable as the training may be which fits an officer for his duties in the exceptional time of war, some attention ought to be paid to the training of a staff officer for the more ordinary times of peace, for it is in time of peace that we should organise and train our Armies, and an officer without administrative knowledge would be useless for this purpose. I think too, the system of selecting our Staff Officers might be improved. Too much stress is laid on the *claims* of officers and too little on their *qualifications*. Under the present system, an officer unknown to the Commander-in-Chief, can only be judged of by the reports of his senior officers and all must feel that these reports cannot always be depended upon, not that I mean to insinuate that senior Officers willingly report favorably on unqualified officers, but, I think it often happens that they are led, on too slight grounds to judge of an officer's qualifications for responsible employ; for instance a Commanding Officer of a regiment who does all the work of the corps himself, and there are many, cannot, I contend, be in a position to speak with certainty of the capabilities of his Staff, since he has given them no opportunity of developing their abilities. I think a

system of probation similar to that of the Foreign Office would be advantageous ; there, a comple of young officers are employed in the Secretary's Office for a period not exceeding two years, at the end of which time, if approved of, they are available for vacancies that may occur. In the army of Bengal ten or twelve appointments on the Army Staff fall vacant annually, yet there is no test by which to judge of the merits of candidates beyond reports (I do not speak of testimonials, for I cannot understand how an Officer can accept them much less solicit them.) I would suggest that all candidates for Staff employ be reported upon primarily as candidates for the Staff College now are ; that if approved of they be then attached to the Head Quarters of the Division or District in which they are serving, and made use of, at the discretion of the general, in the staff offices and on out-door duties they should then return to their regiments and a careful and detailed report of their qualifications made by the general to the Military Secretary. Among the number the best should be selected, say to the number of twelve annually, and called up to Head Quarters, where they should assist in the offices of the Adjutant General and Quarter Master General, three months in each, and also be entrusted with other duties which might easily be found for them such as the compilation of reports, review of court martial proceedings, &c. At the end of this period they should be again sent back to their regiments, their qualifications be carefully inquired into by a committee, consisting of the heads of the departments and the Military Secretary, and those which were fully approved of should be recorded as eligible candidates for staff employ.

I think, with such a list before him, no Military Secretary would be at a loss to bring to the Commander-in-Chief's notice those best qualified for the vacancies as they occurred ; at any rate no harm would be done, one and all would benefit by the experience they would gain, even those who were not selected for a continuance of training or for Staff employ. As for expense, it should cost the Government nothing beyond the transport to and for of the candidates, their absence should be considered as duty, and their allowances adjusted as if absent from their regiments, either on leave, or on acting staff employ. Candidates for higher staff employ who grudged paying so little for the benefit they would receive should not be considered worthy of the prize they aspire to. As for everything else we must pay for knowledge, which, has one great advantage, it never gives us cause to regret its acquisition.

Lieutenant Colonel C. M. Macgregor :—

I wish to offer a few remarks on the subject before us, and I do so in all humbleness and only as one anxious to see this way to the rights of this important question I think the education of Staff Officers not practical enough and that for the majority of Staff Officers it is too high. I see no more necessity for educating all Staff Officers to the highest pitch aimed at in the Staff College than for educating all Infantry Officers to the same extent as Engineer Officers. A large proportion of Staff Officers have to perform very simple duties, which require method, energy,

experience of the service and a good manner, more than anything else ; and these are certainly not what is acquired in a Staff College ; these can, to my idea, be far more easily learnt with a regiment than elsewhere, therefore I would say that an officer possessing these qualities, and able to pass an examination in Military law and administration, tactics of the three arms and in field fortification, should be eligible for the Staff. But there is another branch of the Staff, which requires more extended knowledge, viz. The Intelligence Department, the duties of an officer of this department being principally to acquire information of the enemy and the theatre of war, it is of course necessary that he would have more extended knowledge, he should certainly pass in surveying and drawing reconnaissance, fortification, languages, telegraphy, photography, Military history and geography, strategy and tactics in addition to the above, but officers aspiring to these duties, should be regarded as an advanced class. I object to the Staff College system because it is not practical enough, and I think that for the run of routine Staff duties, you would get better men by simply choosing good regimental officers. To my mind, it is ridiculous to say you can't find the good regimental officers, I cannot understand how any General can command a brigade for three months without being able to put his hand on all the good men in his command, he may make mistakes sometimes but as a rule I do not think he should. Again under the system of the Staff College a man goes there for two years, he crams the whole course into his head in that time and passing out need never open a book again, more, even if he does he gets no advantage from it. I think a man should be allowed to pass in any subject whenever he is ready and a board of Examiners can be got together. Under the present system I might go to the Staff College and make a very bad figure in German and then afterwards, though I might improve in that language to any extent, I should never get the least credit for it, and having once got bad marks in it would have it always against me that I knew nothing of the language, whereas if I knew that I could go up for examination at any time afterwards, I might use a long leave expressly to study that language. It is the same in other things. If officers to survey were wanted at once in England they would look over the lists of the men who had done well in that branch at the Staff College, and some who finding and feeling their deficiencies might have improved, nay perfected themselves in this branch, would not be looked to at all. Then again in the list of subjects in which instruction is given though we find Chemistry, and Geology, I do not think sufficient attention is paid to such vital subjects as the supply of armies, or the transport of stores. Military history and strategy are insisted on and rightly so, but it is too much forgotten how much that history has been affected by supply arrangements, how often defective transport has marred strategy. Yet our Staff Officers aspire to be our Generals and this without any practical knowledge whatever of these vital questions.

I quite agree with Major Jones that only good regimental officers will ever make good staff officers and I think more of these would be secured if the means of instruction were brought more home to their

doors. The appointment of Garrison Instructors I regard as far more practical and sensible than if many more professors were added to the Staff College. If the system is worked by real soldiers with their whole hearts in the work it cannot but do immense good. There is one thing too which holds by far too great an extent in our army, *viz.* once on the Staff always on the Staff, I think far more circulation is necessary and that after every three, or at most five years, every one should go back. Short service is now regarded as the proper rule for the rank and file of a national Army and I think it should be the rule to some extent for the Staff. There is no doubt that the more practically educated officers you have in your army the better, but I do not see how this can be attained if officers are re-appointed again and again to the Staff, and while I would limit the term of service in the Staff, I do not want to create an idea that five years is every man's right. This idea is exceedingly prevalent now-a-days, a man goes to a Staff appointment and with a sigh of relief settles himself down for five years of it, whereas he should I think understand that if it was not for the interests of the service he should not remain more than a week: yet I think that it is decidedly for the interests of the service that a man who has proved himself an able Staff Officer should be re-appointed after having done some duty with his regiment. I would also like to see every restriction taken off the appointment of Engineer and Artillery officers to the Staff of the Army. I think too that officers of the Indian Army should be given exactly the same opportunities of improving themselves as is afforded to officers of the Home Army.

In conclusion I will say that I should like to see officers qualifying for Staff employ more for the opportunity it offers them of improving themselves as practical soldiers than for the sake of the pay attached to appointments."

---

*Opinions on this important subject are invited. Such as are sent, will be published in the next number under head (d) of Rule 3 of the Regulations.*

---



## NOTES.

**On the necessity of an Army receiving a tactical training  
and on the practical advantage of Camps of Exercise.**

## I.

No one can doubt but that the extraordinary success of the Prussian troops in Bohemia in 1866, and again in France in 1870, is mainly attributable to the care and attention which has been paid for years past to their practical training.

2. In the former war great stress was laid on the effect of the needle gun, and now we hear of the superiority of the Prussian Artillery, both no doubt assisted materially in gaining such unprecedented triumphs, but as the Artillery of the Austrians was better served and more effectively used than the Prussians, and as the Chassepôt is pronounced to be a better weapon than the needle gun, it is evident that the fate of battles does not depend alone on the superiority of arms, but that victory will be on the side of the nation whose troops have had the best tactical instruction.

3. The introduction of arms of precision has rendered such instruction more than ever necessary ; it has changed the whole art of war, and has immeasurably increased the value of individual skill and intelligence.

4. It is easy to understand that the old order of battle will not now answer, far-reaching guns and rifles preclude the possibility of supports being drawn up in close columns immediately in rear of the first line, or of reserves being massed within any reasonable distance, except where the ground is peculiarly favorable and offers sufficient protection. Assistance at a critical moment may therefore be impossible ; either it will be found that the supports, in their anxiety to escape from the fatal effect of their enemy's fire, have forced their way into the line of skirmishers, or that they have withdrawn too far to the rear to render the necessary help.

5. To meet this inevitable change our soldiers must receive a practical training, they must learn to appreciate the value of their own particular weapon, and to feel that victory depends on their individual worth and skill ; in fact they must be taught that battles will in future be won, not so much by numbers as by tactics and scientific attainments.

6. This feeling of confidence and independence cannot possibly be gained on the regimental parade ground, where of necessity more attention is paid to technical than tactical training ; and to instil it thoroughly through all ranks it is essential that regiments should be exercised together, and that each branch of the service should learn to recognize the value of the other branches, for without a due appreciation

of the capabilities of the several arms, that mutual assistance and support which one is to the other, and that happy combination of all, so indispensable to success in war, can never be properly understood.

7. Moreover unless troops are in the habit of being exercised together, both officers and men are naturally inclined to think too much of their own particular service, and to fall into the fatal error of trusting implicitly to it, forgetting that each branch has its own special duty to perform, and that he alone can be a good commander, who knows how and when to employ each and all to the best advantage.

8. That the British Army in India is of necessity large, but considering the vast extent of country to be guarded, and the peculiar complications which may at any moment arise, it cannot be said that we have a man too many, or that the Force is even large enough unless each unit of it is armed and equipped in the most efficient manner, and each individual soldier carefully trained.

9. Fortunately the nature of the country admits of this training being carried out in the most complete way ; for many months during the winter the climate is all that could be desired ; large tracts of land exist well adapted for military purposes, and for which little or no compensation would, at that season, be required.

10. By selecting the locality with due regard to the proximity of troops, by the adoption of small light tents which would afford ample shelter in the dry winter months, by reducing baggage to the weight allowed on actual service, and by making use of moveable column carriage, so far as circumstances would admit, it would be quite possible to organize a camp of exercise for 20,000 men every cold weather without incurring a very considerable expense, certainly not more than should be cheerfully granted when the incalculable advantage to be derived from the outlay is considered.

11. In a camp of exercise every thing ought to be carried on as if on actual service. Two *corps d'armée* should be organized precisely as in time of war, and, after a short interval spent in preliminary exercise, one corps should be required to manœuvre against the other, the Commanders being left to carry out their own tactics. In fact from first to last, except in the shedding of blood, there should be all the reality of war.

12. In this way and in this way only can an army be educated. The most perfect machinery will break down if allowed to rust, and so will the finest troops in the world whose military training is confined to the barrack square.

13. Difficulties must be expected whenever troops first take the field, and it is to reduce these difficulties to a minimum and to prevent the probability of their occurring in war time, that camps of exercise are so essentially necessary.

14. In these camps the thoughts of all real soldiers will be drawn towards the more practical part of their profession, and they will be interested in seeing that their corps are kept to the mark, and in endeavouring to remedy whatever may be amiss. Officers of intelligence and gifted with military genius will necessarily come to the front, and grand opportunities will offer of selecting men the best fitted for commands and staff employ.

15. The Infantry Officer will see the vital importance of husbanding his ammunition, and of keeping his men under cover whenever practicable, and will very quickly understand, that the lives of valuable and highly trained soldiers are not to be uselessly thrown away, by trying to do what should be, and can be, more effectively done for them by their friends in the Artillery.

16. The Artillery Officer will discover that something more than mere technical gunnery is required, and that, if he hopes to take that share in the battle, which the excellence and overwhelming power of the weapon entrusted to him demands, he must combine with his knowledge of gunnery, a tactical eye for ground, so that he may be able to bring as many guns as possible into action, and to place them where their fire will be most effective. To the experienced Artillery man, nothing ought to be impossible, nothing ought to be even difficult.

17. The Cavalry soldier will learn the important part which the mounted branch must always be destined to play in war, he will become familiar with outpost duty, and with reconnoitering in an enemy's country. He will perceive the necessity of energy and dash in all his movements and will appreciate the fact that Cavalry leaders must be prepared to act on their own judgment, and that the efficiency of the Cavalry service mainly depends on the genius and talent of the Commanders.

18. Nor will opportunities be wanting for the Engineer Officer to study his profession. Bridges will have to be thrown across rivers; batteries and entrenchments will have to be constructed on short notice, and perhaps under a heavy fire, and fresh obstacles and difficulties will have to be continually encountered, the ready mastery of which will distinguish the soldier Engineer from the mere mechanic; in short the Engineer Officer will not fail to see that theoretical knowledge is of little use without practical experience, and that man who is never at a loss and who can make the most of resources at hand, is of infinitely more value to the Commander than one of greater attainments, who cannot bring his talents into play at the right moment.

19. Before the date fixed for the formation of the Camp, all points of detail should be carefully considered, so that as little time as possible may be spent in preliminary arrangements after the troops have assembled. This is necessary both on the score of health and economy.

20. The several *corps d'armée*, divisions and brigades should be organized, and the part each is to take in the mock war should be de-

terminated. Maps of the country in which operations are to be carried on should be freely distributed ; the kind and description of tents and the number to be allowed to each unit should be decided, the weight of baggage for the several ranks should be laid down, as also should the amount of ammunition to be carried with regiments and in reserve ; in this way the working of the Ordnance and Army Commissariat Departments, both in regard to supply and transport, would be practically tested.

21. Nor should the hospital equipment be omitted. Extensive arrangements as on service will not of course be necessary, but it is very desirable that Medical Officers, both administrative and regimental, should have the benefit of practical training ; small field hospitals should therefore be formed in convenient localities, where all men requiring treatment should be conveyed. This would enable the various descriptions of ambulances to be tested, and the best way of carrying sick and wounded soldiers to be determined.

22. The telegraph and postal arrangements should be entirely under military control, in order that the camp may be as complete as possible in itself, and that officers may gain experience in the organization and working of these departments, and during the summer months a certain number of men in every regiment likely to join the camp should be instructed in signalling ; the provision of the necessary apparatus, and the construction of the required lines being left to the Royal Engineers.

23. For the Postal service no preparatory training appears to be necessary, the bags for the several divisions and brigades should be made up at the nearest Post Office, and forwarded to the Head Quarters of the Force, where they should be distributed under arrangements to be made by the Quartermaster General's Department.

24. As only a limited number of regiments can after all be annually collected in a camp of exercise, leave should freely be given to officers serving at a distance, who may be desirous of witnessing the manœuvres. Suitable work could no doubt be found for all such. Some might be employed as orderly officers, or in the Pioneer and Engineer Corps, while others might assist in the Telegraph and Postal departments, or in surveying and obtaining intelligence under the orders of the Quartermaster General.

25. It would be scarcely possible for an officer to pass even a short time in such a camp without acquiring much useful information, and he would return to his regiment or station with greater zeal for the service, with an eager desire to profit by the experience gained, and with a determination to study the art of war and thus render himself better fitted to take part in the operations of the ensuing year.

FRED. ROBERTS, *Lieutenant Colonel,*

*Royal Artillery.*

## II.

In order to do away with the present difficulty of distinguishing the different Staff Departments of the Army, I venture to propose that they should be distinguished by the colour of the puggree, so that he that gallops may read ; and with this view I append the following scheme :

| DEPARTMENTS.                                                   | DESCRIPTION OF PUGGREE.             |
|----------------------------------------------------------------|-------------------------------------|
| 1.—General Officers (including Brigade Generals) ...           | White.                              |
| 2.—Adjutant General's Department                               | Broad Red and narrow White Stripes. |
| 3.—Quarter Master Generals ...                                 | Broad White and narrow Red Stripes. |
| 4.—Brigade Majors (including Station Staff Officers) ...       | All red.                            |
| 5.—Personal Staff (including Secretaries and Interpreters) ... | Green.                              |
| 6.—Engineers (including Executive Engineers), ...              | Garter Blue.                        |
| 7.—Medical ...                                                 | Black.                              |
| 8.—Commissariat ...                                            | Yellow.                             |
| 9.—Judge Advocates ...                                         | Yellow and Black.                   |
| 10.—Control and Pay Department...                              | Yellow and White.                   |
| 11.—Ordnance ...                                               | Blue and Red.                       |
| 12.—Barrack ...                                                | Drab (Khakee).                      |
| 13.—Musketry ...                                               | Blue and White.                     |

The stripes of colour to be 6 inches broad worked across the puggree.

Adjutant General's Department 6 inches red and 3 inches white.

Quarter Master General's Department 6 inches white and 3 inches red.

Head Quarters Staff to be the same as above with gold cord and fringe, all others to be perfectly plain.

The puggree to be made of silk and to ensure uniformity 2 yards long and 1 foot broad.

Officers belonging to departments not mentioned in this list not to adopt any of the above colours.

S. N. S.

24th May, 1871.

## III.

**Conventional Rules for the Guidance of a Battalion at Field Practice.**

THE following note has been kindly placed at our disposal by a "General," with this explanation: Last winter at—the—Regiment were attempting Field manœuvres in a commendable spirit, but in a fashion wild, desultory and aimless. As I had Staveley's translation of the Prussian Instructions at hand I thought that by expunging a little German pedantry and irrelevant matter as well as condensing the whole in its present form with a slight adaptation of the subject to small bodies of troops, it might be of use to Commanding Officers in permanent quarters and exercising in an isolated manner.

It occurred to me, that, while retaining the ruling idea of the Prussians, the same tactical principles which obtained with larger bodies might also govern minor fractions if the unit were reduced in proportion, though raised in importance. The benefit of dealing with small bodies at first would be that all Officers, Non-Commissioned Officers, and even men would receive a sort of preparatory instruction to the Field manœuvring on a larger scale, which power would be thoroughly accustomed to act independently in securing a common end. Later, the same principles when applied to larger bodies and different ground, would be more easily interpreted; confidence, expediency and fertility of resources would be established. Any number of battalions thus previously trained would be pliable to a degree, when they came to be handled by the general officer, units would be better prepared to fit in the frame work of larger operations.

It is thus that my manuscript was begotten and printed. I had pen and ink illustrations delineating the various operations of the 'petite guerre' 'Bayonet charge.' 'Defence and attack of villages' 'Passes' 'Bridges,' etc., a l'allemand in miniature. The printer's skill had its limits and that portion was omitted, not being an 'homme de lettres' the paper may teem with inaccuracies of language and present a mere canvas capable of receiving any sort of correction, extension or illustration and embellishment. I have however clung to the spirit of the Prussian model which excludes precept and dogma as much as possible while leaving to Commanding Officers much latitude of execution.

**R U L E S .**

1. A general plan must regulate the manœuvres.
2. The general plan emanates from the Superintending (Commanding Officer) Officer who orders the manœuvres and is supposed to have a thorough knowledge of the country, from maps, personal observations, &c. He appoints the rendezvous of the parties to be opposed to each other.

3. Every incident of War in which a small body of troops, acting independently would participate, should be introduced.

4. The minutæ of Adjutants Drill are not to be expected, but order and regularity must be observed as much as possible. The soldier must be taught the use of his intellect and all should clearly understand, beforehand from the leaders, the aim and principle of the operation to be executed.

5. A Battalion should not be parcelled out in small fractions separated at long distances from each other, and the supports ; unless it is supposed to cover the front of a Brigade, it should not be wholly extended in skirmishing order and supports. When acting independently the skirmishers and supports must be in proportion to the small column they are covering, and indeed each company, in this case, has its value and place in the column, which, relatively speaking, the Battalion unit has in the Brigade.

6. The Advanced or Rear Guard of such small forces should always resolve itself into skirmishers when necessary.

7. There are three ways of carrying out the Field Practice. I. By an imaginary enemy represented by 3 flags, one yard square each representing 1st Right Flank *Red*, 2nd Centre *Yellow*, 3rd Left Flank *Blue*. II. By an enemy composed partly of flags and troops. III. By an equal number of men of the same corps. One side being distinguished from the other by undress uniform or any other marked difference.

8. The two bodies are pitted against each other under separate commanders. To them the general idea of the operations only is communicated. Their largest tactical unit is the Company.

9. After the "General plan" has been communicated to the leaders the subsequent movements by them should in no way be influenced or prompted. The leaders are to be left to themselves. No rehearsals are to take place, and it is only after the issue of the affair or "move" that criticism is permitted to the superintending Officer. All should be left to the initiation and discretion of the leaders themselves. By this means they will gradually acquire a fertility of expedients, a coolness and *coup d'œil* which will follow them in real warfare.

10. Every possible detail of Field duties in camp, &c., should be observed, parties told off at the bivouac for picquet, rations, water, fuel, &c. Every precaution of war should be taken in marching, and on any halt for however short a time of rest. It is not by a cloud of Videttes or Sentries that the principles of out-post duties should be observed. Leaders should study not to harass the men unnecessarily. One single Soldier judiciously placed, is worth a whole Company scattered in a senseless manner.

11. Two opposed bodies, may, when on the march be ignorant of the vicinity or approach of one to the other. It is only by a careful feeling of the way and obtaining information, that one can guard against a surprise. Of course this unexpected *rencontre* of the two bodies will force both rapidly to take up the best tactical formations, overcoming meanwhile all difficulties and obstacles of the ground.

12. The "General plan" may define the relative situations of hostile forces for successive days, during the same operations, or (in the case of inability to encamp or bivouac) for several hours in one day. But, as probably, the next hour or day of action may introduce new elements which had not been conceived in the "General plan" the new conditions compel the adoption of a "modified plan" for further proceedings. In case there should be no new conditions no "modified plan" is necessary, but any number of "moves" may necessitate a corresponding modification; while all such modifications, whether one or many are subordinate to the "General (intention) or plan."

13. As before stated, the bodies must have independent action as to the mode of execution, and the knowledge of their mutual situation or intentions should be kept secret from each other, while the legitimate mode of gaining information by patrols or small reconnaissance party, questioning the peasantry, &c., is open to them.

14. Both sides may march to engage, or, one side will attack and the other take up a carefully selected defensive position. The feature of the ground on both sides being thoroughly appreciated and utilised.

15. Any advantage by one leader should not be insisted upon which could not be brought about by a manifest superiority, say, of fire or manœuvre, or by clearly established fault or error of one of the two adversaries.

16. Undue haste is to be condemned as contrary to reality.

17. Pauses of different duration, according to the number of troops and their composition during an engagement, should separate the decisive incidents of a manœuvre. These are the different acts of the performance, and should be termed 1st and 2nd "moves," etc., etc.

18. Moral influences have no place in these exercises. They have doubtless a great share in the actual warfare. Here we must assume equality of courage, endurance, etc. No suppositious obstacles of ground, etc., are to be taken into account.

19. Flank turning movements should be resorted to with considerable caution. The adversary whose flank is turned, may be fully aware of it and have his reserve in hand with which the attacking party, not having calculated upon, may be caught in a trap of his own setting, and placed at serious disadvantage.

20. The Superintending Officer, alone, decides the issue and end



of a manœuvre. He can at any time order the "cease firing" and "halt" for the correction of mistakes, etc.

21. Whichever of the leaders, during a "move" thinks he has fulfilled his task, or has convinced himself that he cannot accomplish it, reports at once to the superintending Officer. The engagement is then broken off and the hostile parties occupy billets, encamp or bivouac, as the case may be, a short or long rest is allowed, piquets and sentries having been thrown out.

22. At the end of the day the Superintending Officer causes the Officers' call to be sounded to criticize or discuss the event. A mounted trumpeter or bugler should be always at his side.

23. The Superintending Officer may act himself as "umpire," or he may delegate one or two Officers not actively employed in the operations, to watch and decide in each separate case, unbiassed by the particular ideas of the leaders themselves.

The duty of the umpire is to decide

- |                                 |     |                                                                   |
|---------------------------------|-----|-------------------------------------------------------------------|
| I. Whether a force is to retire | ... | It retires.                                                       |
| II. Whether cut off altogether  | ... | Returns to quarters.                                              |
| III. Cut off temporarily        | ... | { Retires behind its lines, umpire<br>decides further employment. |
| IV. If captured                 | ... | Returns to quarters.                                              |

24. The decision of the umpire to be notified during the engagement to the leader concerned.

25. Firing inside a village, near tents, or any inflammable material not permitted. The defence of villages must take place on the outskirts, along fences, ditches, enclosures, etc.

Fractions occupying strong points "within" a village to be instructed how they should act in earnest, if ordered "not to fire."

26. The destruction of a bridge can only be simulated. Umpire will decide when it has been destroyed and repaired.

27. Cornfields, plantations and private property must be respected. Some crops should be considered as natural obstacles, and the decision early notified by the Superintending Officer.

28. Troops armed with Sniders or Enfield Rifles should not engage in volley or independent firing at a distance from the enemy of less than 250 paces, or with smooth bores at less than 150 paces. Fire should not be opened by skirmishers with Sniders or Enfield at less than 200 paces, or with Smooth Bores at less than 150 paces. A charge with the bayonet should not be made at more than 60 paces distance, and up to that distance it must be delivered with the greatest energy and with loud cheers, should opposed troops approach nearer than desirable the 'Halt' should be sounded and troops will order arms.

29. The leaders should not be merely content with attack and defence, but they should, at times, resort to stratagem and deceive each other by false demonstrations. They should affect intentions which they have no idea of carrying out, conceal their march, effect surprises, before a design can develop itself or be interpreted.

30. The leaders should make themselves acquainted with the depth of fords in their vicinity, or line of march, and be prepared to convey information for the march of Infantry, Cavalry or Artillery, and report whatever obstacles might impede it.

31. Communications should be jealously guarded.

32. Finally, the law must not be received from the enemy, but imposed on him, and it should be borne in mind that partial attacks from the circumference, on the clearsighted and prudent enemy, without preponderating motives or forces entails great risks.

*N.B.*—Every Officer should provide himself with a Field Telescope, and some correct sketch of the country. All Officers should make themselves acquainted with its general features while they advance, retreat, or fight, and be prepared to submit a sketch, however slight, of the day's proceedings to the Superintending Officers. One will be selected from each force after a manœuvre. Officers looking on should wear no sash. Umpires should have a white band on their sword arm.

#### A GENERAL OFFICER.

## INVENTIONS.

**A new pattern Portable Dooley by Sub-Conductor R. J. Dennett, Army Commissariat Department.**

## DESCRIPTION :

THE cot is an ordinary charpoy: the frame made of hard wood. When being packed for the march, the lacing at each end is undone and the end pieces slipped off.

The top consists of a bamboo pole  $13\frac{1}{2}$  feet long. Two rods of half-inch iron slightly curved with pivots at the centre of each to fix into the bamboo. Two strips of light wood with iron sockets at the ends of each to fit on the rod, and secured by small iron hooks which fit into holes at the ends of the rods. A rope from each leg of the cot tied to the ends of the rods keeps the top from falling to either side.

The end supports consist of two iron rods fastened by iron bolts to each leg, and to the pole by a screw-bolt and nut forming a sort of triangle which is kept upright and steady by other iron rods going from the sides of the cot and hooking into catches.

Clips with small chains are fastened to each leg, which fit into holes made in the bolts, thus preventing the rods from slipping off.

A purdah of red dosooty lined with white cloth forms the outside covering.

When the Dandy is to be packed for the march, the rods, bolts, pole, etc., are separated and placed lengthways in the centre of the charpoy, which is then folded up and tied firmly with the end ropes; the whole is then packed in a suleetah.

The advantages claimed for this dooley are as follows :

1st. The great advantage of doing away with expense of building and of keeping in repair large temporary Dooley Godowns (for instance, a Verandah is in course of construction in my Godown for Doolies at a cost of Rs. 2,500 or thereabouts.

2nd. Being portable their despatch from station to station is facilitated.

3rd. A regiment is enabled, when marching, to take its Doolies with it by rail, an advantage of much importance if it had to leave the rail at a point where the means of procuring other Doolies would be difficult, as would invariably be the case on active service.

4th. The necessity of Kahars receiving full in lieu of half hire when returning with the Doolies is obviated, thereby saving Rs. 201 per mensm for every 15 Doolies, as follows, which might be returned on camels, at

5 Dooleys per camél. A Regiment taking its Dooleys with it (see para. 3) the necessity of their being returned would seldom arise, as they could be taken to pieces and housed like other camp equipage.

The Saving in every 15 Dooleys would be as follows :

|                                           |     |         |
|-------------------------------------------|-----|---------|
| 15 Dooleys—90 men at Rs. 2-8 each         | ... | Rs. 225 |
| Deduct hire of three Camels at Rs. 8 each | ... | „ 24    |
| Total thus saved ...                      |     | Rs. 201 |

5th. They are better adapted for use in Cholera Camps (especially in the rains) when carriage is difficult to procure, and thus the inconvenience of sleeping on the damp ground until cots could be sent from barracks, or native cots provided by the Commissariat which would entail a great expense on the outbreak of an epidemic, is obviated.

I may add that native cots are authorized for such purposes, per C.G.C., No. 96, dated 16-8-70.

6th. The ends being moveable the advantages of a regularly made bed-cot (which is a great boon to the sick in tents) are apparent.

7th. The great advantage of being constructed for Europeans to carry, with or without a roof, the former to protect the patient from the inclemency of the weather, and the latter when required as a stretcher for removing the dead and wounded from the field. It being universally understood that the old pattern Dooley with the pole cannot possibly be carried by Europeans, should the Kahars abscond from the field.

8th. As a Regiment on an ordinary march is allowed Dooleys five, and on active service ten per cent. of strength (*vide* C.G.C., No. 90, dated 8-11-67) they could be carried on ten or twenty camels, as the case may be, and Kahars only entertained as required, they being invariably procurable in every village in India, thus a saving of Rs. 142 for every five Dooleys not occupied is effected, it being believed that on ordinary occasions scarcely half the number allowed are required for use although the full establishment has to be kept up for the conveyance of the old Dooleys, there being no other means for carrying them. Any number of the pattern submitted, being portable, may be transported by camels, carts, or any other conveyance.

9th. Simplicity of construction is at once shown. They can be made by any native mistry in a very short time.

R. J. DENNETT,

*Sub-Conductor,*

*Army Commissariat Department.*





## CORRESPONDENCE.

## I.

To

THE EDITOR OF

THE UNITED SERVICE INSTITUTION OF INDIA.

SIR,

I would take advantage of the pages of the Journal of the United Service Institution of India to re-open a question I unsuccessfully brought to notice some years since, *viz.* of the great advisability there is for the establishment of a Veterinary School, or Schools, in India.

Such a School exists in Bombay, and has, I believe, proved a great success.

The Commandants of the Native Cavalry Regiments will, I am sure, bear me out in saying there is at present not only the greatest difficulty, but almost an impossibility, in obtaining any qualified men to fill the situations of Salootries and Farriers, a want which I doubt not is equally felt in Native Batteries.

The treatment of disease in the human subject and in the horse are so similar, that perhaps in the first instance, Veterinary classes could be advantageously arranged for at the Medical Colleges, where the preliminary education in regard to anatomy and the properties and uses of medicines might be obtained, a practical course being afterwards gone through under a Veterinary Surgeon : and who might lecture periodically to the classes at the College. The expenses should not be great, and would probably be covered or nearly so by the fees which would be required from the students, and which in the case of soldiers or farriers in the Native Cavalry would be met regimentally.

I do not think the classes should be confined only to the army, but a new field of education might be opened thereby to the natives of the country, and a great want supplied in all districts and large towns, mitigating in some measure the present barbarous treatment of sick animals etc., as now carried on throughout the country, and a trained body of native Veterenarians would be secured, whose services would be invaluable for employment with the cattle of a Land Transport Corps of an Army acting within or beyond our border.

W. PAGET, *Major*,*Commandant 5th Punjab Cavalry.*

## II.

SIR,

I think the following extract of a letter from the late Sir Henry Durand (among the last he ever wrote) may be of interest to the readers of the Journal of the United Service Institution of India, and not without some importance to the Government in regard to the question of adequately arming our Native Army.

The letter in question is dated Kohat 17th December 1870, and says, "one thing I must note, to-day I saw a rifle factory on the Arm-  
" strong coil principle that would surprise our gunsmiths in London, all  
" so simple yet the manipulation so dexterous, and the weapon apparent-  
" ly so strong and serviceable. I was surprised, men to have one tested,  
" and expect to find a strong reason for better arms to our Native troops.  
" These factories turn out about 400 rifles a year, and all go to the tribes  
" around. The curious thing is 80 years ago this art or manufacture  
" was introduced from Persia. Here it has remained. A long descrip-  
" tion would be interesting but I have not time to say more than that I  
" have been thoroughly surprised."

Perhaps, some of our members at Kohat may be induced to follow up the hint given in the concluding paragraph, and give us an account of this factory.

I am, Gentlemen,

Your obedient Servant,

C. M. MACGREGOR, LIEUT.-COL.,

*Bengal Staff Corps.*

## III.

SIR,

Lieutenant Colonel Macgregor's letter in the last number of the Journal contains the wish of a great number of officers of the Indian Army as regards admission to the Staff College, Sandhurst, but there are one or two points which, I think, require attention.

1st. Lieutenant Colonel Macgregor suggests English pay whilst at Sandhurst, as this would be less than the minimum rate of furlough pay, *i. e.*, £250 per annum; I would suggest that in any proposal to Government for this purpose, furlough pay and not the English rate be recommended. The reasons which induced an increase in the furlough rates of pay apply equally to officers at Sandhurst.

2nd. The time passed at Sandhurst should be allowed to count as service in India.



3rd. As no expenditure now-a-days is incurred unless duly provided for in the annual budget, and as it is highly desirable that some few officers should begin their studies at the College as soon as possible. I beg leave, therefore, to offer the following suggestion, by which, some 20 or 25 officers might go home this year. It is, offer to officers willing to proceed home at their own expense, permission to do so, obtaining for them in this exceptional case admission to the Staff College without passing the preliminary entrance examination, but requiring them, from date of permission to proceed to England being granted, and until they reach Sandhurst, to read up and study the obligatory subjects required for the entrance examination. The obligatory subjects are, I believe, Arithmetic, the first four books of Euclid, Algebra as far as Quadratics, Elementary Field Fortification, and either French, German, or Hindostanee. If the Officers granted leave to go, be allowed to leave India in October, by the first February next year, the date the College course commences, they would be quite up to the standard for admission required in the obligatory, if not in other subjects as well. In return, I do not think it is too much to ask, 1st, that the time passed at Sandhurst be allowed as service in India, and 2ndly, Indian pay and allowances of rank without Staff pay. I do not think the Government will be put to any expense by the above suggestion, as it would still have had to give the same rate of pay to these Officers who would, otherwise, be in India with their Regiments. I, for one, would be glad to accept the offer suggested above, having for many years been anxious to obtain an opportunity of admission to the Staff College.

I beg to remain,

Yours obediently,

J. P. FITZGERALD COLOGAN, *Captain,*

*Bengal Staff Corps.*



## ORIGINAL PAPERS.

### I.

#### Remarks on the proportion of Artillery required for the Army in India.

The proportion of Artillery we require in this country has doubtless been well considered in higher quarters, but it is a subject of such importance, that a few facts regarding it may not be superfluous. Men's minds have of late, especially in England, been much taken up with the question of our national defences; but it cannot fail to be remarked, that while public opinion is split up into parties upon it, military men as a rule differ widely from civilians, in the views they take. While it must be allowed that anything like a national panic is injurious and exposes us to the ridicule of our neighbours, it cannot, I think, be denied, that the British Nation have required something startling or even sensational, to induce them to look into the *cons*, as well as the *pros* of the matter.

Military men who have been prominent in the discussions which have lately taken place, do not advocate measures of advancement for themselves or their brethren in arms; the preservation of the national honour and of England's Military glory, is their object; and, therefore, I think there is an unfair reflection upon certain military writers in such paragraphs as the following, which I copy from the "Times:"

"What would have been the case if France instead of Prussia had been triumphant in the strife? If we are to expect an invasion from Germany, why not from Italy or Spain? Will there ever be a relief for us, if one bugbear is thus to be set up after another, and if every effort of our own is to be dismissed as contemptible as soon as it is made? What are we to do for the final satisfaction of alarmist projectors, and, it must be added professional advisers?"

Military men, not as a rule given to start at shadows raised by themselves, can see danger when the temper of England is directed by men capable of penning such sentences.

As an instance of the widely prevailing ideas which these "professional advisers" have striven hard to counteract, we may refer to the view taken by the *Spectator* in reviewing the "Battle of Dorking," when it remarked that the writer had taken no account of the Army that, on the first sound of danger, would spring up in the south of England. It is this idea of an Army "springing up" at once into existence and efficiency, which the British mind will not part with: who the magician is, and where lies the wand we do not learn. And yet there are happily plenty enough of officers in our Army, ready and willing to face difficulties as well as dangers to almost any extent.

But this paper refers to Artillery matters, not to generalities, to facts, not theories, and to India as a part of the British Empire. The facts I would wish to draw attention to, are the relative proportions of Artillery to the rest of the Army which existed before the Mutiny, and which we now have; adducing as practical examples of our requirements, the employment and distribution of the Artillery force in the Bengal Presidency, on the occasions of the first and second Sikh wars. These are quoted as average types of a war in India, but were we to try conclusions with any foreign power on its shores, or to face another general combination within its limits, the deductions would fall short of the truth.

It is generally supposed that 3 pieces of Artillery per 1000 men is the proper proportion for an Army, but neither here nor at home have we got it. Continental authorities have laid down a smaller ratio, about 2·5; but in calculating strength, all ranks are given: we usually only mention rank and file in our computations. Whatever the proportion is, it must be calculated for the whole Army; for every corps which may be engaged in the field, or retained for the defence of a cantonment or fort. It would be false reasoning to calculate merely for the regular portion of an Army, and omit the reserves and the irregular forces and regiments, which though primarily intended for local purposes, may yet be employed against an enemy: on the contrary, the less disciplined a body of men may be, the more it stands in need of Artillery support. This reasoning would be false too, because local status goes for little in the argument.

We start with the supposition that Artillery is kept up to an average war footing. In calculating ordnance, too, for the field, the mortar, or heavy batteries of position are left out, as well as all mountain batteries, which are intended for particular service not for general use. On the other hand the Corps of Guides, Governor General's Body Guard, &c., which have special duties of their own, are also omitted.

Table No. 1 gives a comparative statement of the strength of the Bengal Army, with the Contingents of Central India as they appear in the Army Lists, in the early part of 1857 and 1871, the averages of strength are only roughly given. They used to vary considerably, Native Regiments of the line had 1,000 men, others less; at present the rank and file amount to 408 for British Cavalry, 384 for Native Cavalry of the line, and 420 for Punjab Cavalry, in round numbers 400; British Infantry 820, Native ditto 640; none are upon a war footing. It will be seen that the total strength of the Army is now not more than one half what it then was; on the other hand, the Army has gained by the erasure from its lists of the numerous local half Military Corps, which had grown from the earliest times, like fungus excrescences, on the regular establishment. According to these figures too, we see that the proportion of guns now is about one-third greater than it used to be, while the number is nearly one-third less; of the twenty-one Field Batteries in 1857, however, 5 were drawn by bullocks, and the "Post Guns,"

a relic of the system which began to disappear in 1818, were supplied, when necessary, with draught cattle from the Commissariat. Neither could be placed in comparison as to efficiency with the ordnance of Horse Field Batteries.

If, however, we calculate the regiments we have now, at a more fitting war average of 500 sabres and 1,000 bayonets (which would include depot reserves), we should have 17,750 Cavalry, and 103,000 Infantry, which would place our force of 232 pieces of ordnance in the proportion of 1·9 per 1,000 only: we should require 300, or no less than 68 more than our present complement, to bring up the proportion to 2·5 per 1,000 for Bengal alone.

It is necessary, however, to consider the whole Army of India with reference to this question. Table No. 2 gives the whole of the regiments in the three Presidencies and in Central India, and here we are met by the question:—Is it necessary to calculate for the whole Army of India on a war footing? Perhaps not. But the present reduced establishments would be too unsafe a basis. If we therefore take the average at 480 sabres, and 800 bayonets for each regiment, we have a total of 175,760 men, with a proportion only of 2·2 guns per 1,000. To bring the latter up to 2·5, an addition of 51 pieces of ordnance would be required.

Now let us take the case of two wars of average magnitude in India, and see what force of Artillery was required on service and what was left in garrison.

*In the first Sikh War, 1845-46, there were of the Bengal Artillery—*

|                                                                                                                                            | Horse Artillery<br>Batteries. | Field<br>Batteries. |
|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------|
| With the Army in the field.....                                                                                                            | 11                            | 5                   |
| In Sind.....                                                                                                                               | 0                             | 2                   |
| In Cantonments at Loodiana and Muttra .....                                                                                                | 2                             | 0                   |
| Ditto ditto at Meerut, Neemuch, Nusseerabad,<br>Mhow, Nowgong, Agra, Bareilly, Lucknow, Cawn-<br>pore, Benares, Dinapore, and Dumdum ..... | 0                             | 12                  |
| Total.....                                                                                                                                 | 13                            | 19                  |

*In the second Sikh War, 1848-49, there were—*

|                                                                                                                                   | Horse Artillery<br>Batteries. | Field<br>Batteries. |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------|
| In the field, including Army of Re- ( Bengal Artillery 11                                                                         |                               | 8                   |
| serve and Lahore Garrison..... } Bombay do. 1                                                                                     |                               | 2                   |
| In Cantonments (Bengal Artillery) at Loodiana & Muttra 2                                                                          |                               | 0                   |
| Ditto ditto ditto Neemuch, Nusseer-<br>abad, Nowgong, Delhi, Agra, Bareilly, Lucknow,<br>Benares, Dinapore, Mhow, and Dumdum..... | 0                             | 11                  |
| Total.....                                                                                                                        | 14                            | 21                  |

If any one will take the trouble to look out the stations mentioned here, upon a map, he will be able to judge how far the reserves were available for any contingency during these wars (and both had their ugly chances at one time,) even, setting aside the badness of country roads and the difficulty there would have been in procuring carriage. I was with three reserve companies which left Dumdum for the Punjab in November 1848, and the only Artillery men we met with from Cawnpore, (where was stationed only a reserve company,) right up to the Sutlej, were Colonel Farrington, and Lieutenant G. K. Money, the Commanding Officer and Adjutant of the 7th Battalion at Meerut. We were halted for a couple of days at Allahabad, in December, because the festivals of the Dewali and Muharram falling together, the Muhammadans, as their wont is, took advantage of the absence of troops\* to prove the sons of Ali better men than the gods of the Hindus; and here we may remark, that the proceedings of the Wahabis, and the recent events in Rohilkhund, are only a portion of the proof we constantly receive, that the fanatical spirit of the Musalman has not yet been "laid," but is as ready as ever to spring into life.

If, therefore, the 32 Horse and Field Batteries which we had at the period in Bengal, in addition to a number of Artillery details attached to Irregular Corps, and Post Guns, were not sufficient for the internal defence of the country in 1845-49, we can hardly consider our present strength of 33 to be so with the Punjab and Oude added to our territory, even taking increased facilities of communication into account.

The great disproportion between the Horse and Foot Artillery employed in the Sikh wars will have been noticed. It is readily explained by the number of Field Batteries which had bullock draught. In the end of 1845, two were drawn by camels, seven by horses and ten by bullocks; economy refused to attend to the remonstrances of "professional advisers," reiterated during a previous period of nearly thirty years, and perpetuated a system which made a large number of batteries useless for *active* service, and in the face of modern improvements, ridiculous on parade.

Here again the question suggests itself—is the proportion of Horse Artillery too great? We have as will be seen by a glance at Table No. 2, a large proportion of the more expensive branch than the Cavalry bear to the Infantry. It has been the expressed opinion of more than one officer of experience that we could dispense with Horse Artillery altogether in India. I do not know whether any Artillery Officers have endorsed this view. I think not. I rather think that the opinion of a large majority of the best judges of all branches would be for retaining it. We have indeed many instances of its value. It is not necessary to

---

\*That the paucity of troops in these Provinces was not unobserved, we have a proof also in the intercepted letter written from her place of confinement at Benares to Sirdars Chattr Singh and Mulraj, by the imprisoned Maharani Jhanda Kaur in February 1849: she said "the British have no troops in this part of the country, certainly not more than 1,000 or 2,000 men, and at night are accustomed to sleep with no one near them." But when are we not watched?

go back to Lord Lake's time and refer to the well known and astonishing marches performed by Cavalry and Horse Artillery, for proof. The pursuit of the Sikhs and Afghans under Sir Walter Gilbert in 1849, and the pursuit of Tantia Topee in 1858, are later instances of the absolute necessity of ordnance of the most moveable kind. Native armies in India have always consisted of a very large proportion of Cavalry, and the injury which might be done, and perhaps temporary success achieved by them, which might be matured by neglect into disaster, will always compel us to keep weapons in hand which can efficiently meet such emergencies. I doubt much if any officer, with guns of the heavier calibre, would have attempted the feat accomplished by the 4th Troop, 3rd Brigade, when Lieutenant Murray Mackenzie took it across the Unai and Irak passes, to Bamian in Afghanistan, in September—October 1839, after the route had been officially pronounced impracticable.

It might be possible to do with only ten or twelve Batteries of Horse Artillery, but that our total number of field pieces is considerably under the mark, the foregoing facts I think plainly show.

With regard to the Garrison Batteries, these facts do not supply such clear data. It would not appear that we need so much an increase of numbers in men as an alteration in their disposition, and this I will endeavour briefly to shew. With its surf-bound sea-line, India requires very few coast defences: we have points which must be occupied it is true, but the nature of our tenure of the country requires that we should never fight behind walls though we may have to fight against them. It is therefore only for sieges that Garrison Artillery are wanted: on such occasions the call is for larger bodies of men than we generally have available. The records of all our sieges, except perhaps that of Hatras in 1817, show that not only Horse Artillerymen but also Cavalry and Infantry, were called upon to perform duties in the Batteries. Wherever Garrison Artillery are employed on service they are required in much larger bodies than any one of our Batteries on their present strength could furnish, even for the smallest undertakings. I know of no instance to the contrary. The establishment allowed for India is much smaller than at home, and I do not think any reason can be given for the difference; economy, probably, was the object, but it is not attained as I hope to show.

The old establishment of reserve companies was considered insufficient, and H. R. H. the Duke of Cambridge endorsed this opinion in speaking of the Artillery in general in India.\* The special Committee of Artillery Officers assembled at Meerut in the end of 1859, recommended 130 Non-Commissioned Officers and Men for Garrison Batteries, the Government of India approved of 75.

That the then Secretary of State for India doubted the advantage of such a reduction may be inferred from his own words in confirming the Government proposition. He says:—

---

\* Quoted in G. G. O. No. 205, dated.

"13; experience alone can show, however, whether with the number of reserve Batteries now proposed, the organization will suffice to render the Batteries themselves efficient in garrison and siege operations, and be equal at the same time to furnish reinforcements on occasional emergencies to the Light Field Batteries. They must be looked upon as available for both these purposes."

While most, if not all, Artillery Officers will dissent from the proposition that Garrison Artillery should be considered a reserve for the other branches,\* few, perhaps, will not agree in the opinion that the Batteries are too small for efficiency, that there is no immediate necessity for increasing the number of men.

Fewer Garrison Batteries than of an increased strength is the conclusion, and I would submit that given in Table No. 3 (which also shows the present one) as an appropriate establishment.

The chief reasons for increasing the Batteries as proposed are—

I.—That the proportion of Gunners to Non-Commissioned Officers will give a better class of men for promotion: on nothing so much as the Non-Commissioned grade does the steadiness and good conduct of the Battery depend; it is almost superfluous to say so, but all the exertions of good Officers may be neutralised by a bad set of them. Do our Batteries get a fair chance in a matter of such paramount importance? In an Infantry regiment there are 780 privates from whom to select 40 Sergeants and 40 Corporals, Company Non-Commissioned Officers. A proportion of 9·6 privates to each Non-Commissioned Officer. In Horse and Field Batteries there are 118 Gunners and Drivers for the 20 Non-Commissioned Officers; a proportion of 5·9 Gunners or Drivers to each Non-Commissioned Officer; and when we come to Garrison Batteries, there are 60 of the former to 13 of the latter, a proportion of 4·6 to 1.† That is, among every four Gunners in the latter case (for Batteries never being up to full strength the disproportion is even greater) we are expected to find one man not only of steady character but of superior education, which is rare, and capable of detecting and repressing irregularities in others, with judgment and firmness, rarer still. What wonder therefore, if we find men repeatedly promoted again after reduction?

II.—The provision of the means of instruction for Garrison Batteries is attended with considerable expense, and their extent depends on circumstances; at stations where there are *Arsenals*, (where Garrison Batteries as a rule should be stationed,) the means will be greater and nearer at hand to reduce the number; besides being in this respect an economical measure, would improve the means of instruction for the remainder.

---

\* It is easy to imagine an emergency arising in war time, rendering indents upon the Garrison Artillery for men a necessity, still the principle advocated holds good.

† Regimental and Brigade Staff Non-Commissioned Officers are left out; to include them, as strictly speaking should be done, would make the comparison more unfavorable.



III.—The increased respectability attaching to the command of a large body of men would be more commensurate with its real importance. We ought not to lose sight of such considerations. The men themselves would feel it as much as any one, and an improved tone would result.

IV.—In the event of any extension of our force of Garrison Artillery, it would be easier to make one such Battery as that proposed the nucleus of two, than to form an additional one by drafts of experienced Gunners from different Batteries, as would now have to be done. Every one may not agree with me in this, but it appears to me to be plain.

I have not referred to Garrison Batteries, supplied with heavy ordnance, as Batteries of position, because I think they should be classed among the Field Artillery, but as long as they are manned as at present there is urgent need for a larger number of men with them. The number of Non-Commissioned Officers, four of each grade, is not adapted for the six subdivisions, and to give only the number of men requisite for serving the ordnance, and two men besides per subdivision, for each of the three rear lines of carriages, makes 76 Non-Commissioned Officers and men present on parade. If to these we add guards, orderlies and sick, 100 men of all ranks will not appear too large a number. At present a Heavy Battery is not fit for service as it stands.

Omitting then Heavy and Mountain Batteries, we might have in Bengal eight Garrison ones instead of fourteen, located as follows :—

1. Fort William.
2. Allahabad.
3. Cawnpore.
4. Gwalior.
5. Agra.
6. Ferozepore.
7. Meer Meer.
8. Attock, to go to Rawul Pindie when the Arsenal there is completed.

In Madras, instead of seven, we might have three stationed at—

1. Fort St. George.
2. Rangoon.
3. Bellary.

And in Bombay, where now there are five, there might be three ; viz. at

1. Aden.
2. Poonah.
3. Belgaum.

We should thus have 14 Batteries of 120 Gunners, instead of 26 with only 60; an increase on the whole of 120 Gunners. The comparative cost would be as follows:—

|                                          |              |           |    |    |            |     |            |    |    |
|------------------------------------------|--------------|-----------|----|----|------------|-----|------------|----|----|
| 26                                       | Batteries at | Rs. 3,417 | 3  | 11 | per month, | ... | Rs. 88,868 | 5  | 10 |
| 14                                       | do.          | " 4,979   | 11 | 0  | do.        | ... | " 69,715   | 11 | 0  |
| <hr/>                                    |              |           |    |    |            |     |            |    |    |
| Total saving per month, Rs. 19,132 11 10 |              |           |    |    |            |     |            |    |    |
| <hr/>                                    |              |           |    |    |            |     |            |    |    |

These remarks have extended much beyond the limits I had allowed myself, so I will add nothing further than to say that they have been carefully thought over before being committed to paper.

J. W. STUBBS,  
*Captain and Brevet Major, R. A.*

**Table No. 1.**

*Comparative strength of the Army in Bengal and Central India  
at the commencement of the year 1857 and 1871.*

|                                                                    | 1857.    |           |                    | 1871.    |           |                    |
|--------------------------------------------------------------------|----------|-----------|--------------------|----------|-----------|--------------------|
|                                                                    | Cavalry. | Infantry. | Guns or Howitzers. | Cavalry. | Infantry. | Guns or Howitzers. |
| Batteries of Horse Artillery ... ..                                | ...      | ...       | 78                 | ...      | ...       | 66                 |
| Field Batteries ... ..                                             | ...      | ...       | 126                | ...      | ...       | 132                |
| Heavy Field Batteries ... ..                                       | ...      | ...       | ...                | ...      | ...       | 6                  |
| Post Guns ... ..                                                   | ...      | ...       | 14                 | ...      | ...       | ...                |
| Her Majesty's Regiments ... ..                                     | 2        | 14        | ...                | 5        | 32        | ...                |
| E. I. Co.'s European Regiments ... ..                              | ...      | 3         | ...                | ...      | ...       | ...                |
| Native Regiments of the line ... ..                                | 10       | 74        | ...                | 19       | 45        | ...                |
| Irregular Cavalry of the line ... ..                               | 18       | ...       | ...                | ...      | ...       | ...                |
| Goorkha Regiments ... ..                                           | ...      | 3         | ...                | ...      | 4         | ...                |
| Sikh Infantry Regiments ... ..                                     | ...      | 4         | ...                | ...      | ...       | ...                |
| Punjab Irregular Non-Frontier Force ... ..                         | 5        | 6         | 18                 | 5        | 11        | 12                 |
| Oude Irregular Force ... ..                                        | 3        | 10        | 18                 | ...      | ...       | ...                |
| <i>Local and Irregular Corps.</i> { Calcutta Native Militia ... .. | ...      | 1*        | ...                | ...      | ...       | ...                |
| Assam Light Infantry ... ..                                        | ...      | 2*        | ...                | ...      | ...       | ...                |
| Sylhet ditto ... ..                                                | ...      | 1*        | 2                  | ...      | ...       | ...                |
| Arracan Battalion ... ..                                           | ...      | 1         | ...                | ...      | ...       | ...                |
| Pegu Light Infantry ... ..                                         | ...      | †         | ...                | ...      | ...       | ...                |
| Ramghur Light Infantry ... ..                                      | ...      | 1         | 4                  | ...      | ...       | ...                |
| Bhagulpore Hill Rangers ... ..                                     | ...      | 1         | ...                | ...      | ...       | ...                |
| Shekawattee Battalion ... ..                                       | ...      | 1*        | ...                | ...      | ...       | ...                |
| Kelat-e-Ghilze Regiment ... ..                                     | ...      | 1*        | ...                | ...      | ...       | ...                |
| Ferozepore ditto ... ..                                            | ...      | 1*        | ...                | ...      | ...       | ...                |
| Loodiana ditto ... ..                                              | ...      | 1*        | ...                | ...      | ...       | ...                |
| Mhairwara Battalion ... ..                                         | ...      | 1         | ...                | ...      | ...       | ...                |
| Bheel Corps ... ..                                                 | ...      | 2         | 2                  | ...      | 2         | ...                |
| Nimar Police Battalion ... ..                                      | ...      | ‡         | ...                | ...      | ...       | ...                |
| Hyderabad Contingent ... ..                                        | 4        | 6         | 24                 | 4        | 6         | 16                 |
| Gwalior Contingent ... ..                                          | 2        | 7         | 24                 | ...      | ...       | ...                |
| Nagpore Irregular Force ... ..                                     | 1        | 3         | 6                  | ...      | ...       | ...                |
| Bhopal Contingent .. ...                                           | 1        | 1         | ...                | ...      | ...       | ...                |
| Kota Contingent .. ...                                             | 1        | 1         | ...                | ...      | ...       | ...                |
| Jodhpore Legion, now Erinpoorah I. F. ... ..                       | 1        | 1         | 4                  | 1        | 1         | ...                |
| Malwah Contingent ... ..                                           | 1        | 1         | 8                  | ...      | ...       | ...                |
| Deoli Irregular Force ... ..                                       | ...      | ...       | ...                | 1        | 1         | ...                |
| Bhopal Battalion ... ..                                            | ...      | ...       | ...                | ...      | 1         | ...                |
| Central India Horse ... ..                                         | ...      | ...       | ...                | 2        | ...       | ...                |
| Total number of Regiments and Guns ...                             | 47½      | 148       | 328                | 35½      | 103       | 232                |
| Average strength of Regiments ... ..                               | 500      | 950       |                    | 400      | 700       |                    |
| Total number of men ... ..                                         | 23,750   | 140,600   |                    | 14,200   | 72,100    |                    |
| Grand Total .. ..                                                  | 164,350  |           |                    | 86,300   |           |                    |
| Average number of Guns per 1,000 ...                               | 1.99     |           |                    | 2.68     |           |                    |

\* These Corps are still in existence as Line Regiments.

† Now belongs to Madras ; omitted therefore from both columns.

‡ Omitted as only a Police Corps.

**Table No. 2.***Strength of the Army in India at the commencement of the year 1871.*

|                                          |                                           | Cavalry.          | Infantry. | Guns and Howitzers. |
|------------------------------------------|-------------------------------------------|-------------------|-----------|---------------------|
| <i>Bengal.</i>                           | { 11 Batteries of Horse Artillery, ... .. | ...               | ..        | 66                  |
|                                          | { 22 Field Batteries, ... ..              | ...               | ...       | 132                 |
|                                          | { 2 Heavy Field Batteries, ... ..         | ...               | ...       | 6                   |
|                                          | { British Regiments of the line, ... ..   | 5                 | 32        | ...                 |
|                                          | { Native Regiments of the line, ... ..    | 19                | 45        | ...                 |
|                                          | { Goorkha Regiments, ... ..               | ...               | 4         | ...                 |
|                                          | { Punjab Frontier Force, ... ..           | 5                 | 11        | 12                  |
| <i>Central India.</i>                    | { Central India Horse, ... ..             | 2                 | ...       | ...                 |
|                                          | { Deoli Irregular Force, ... ..           | $\frac{1}{4}$     | 1         | ...                 |
|                                          | { Erinpoorah Irregular Force, ... ..      | $\frac{1}{4}$     | 1         | ...                 |
|                                          | { Bheel Corps, ... ..                     | ...               | 2         | ...                 |
|                                          | { Bhopal Battalion, ... ..                | ...               | 1         | ...                 |
|                                          | { Hyderabad Contingent, ... ..            | 4                 | 6         | 16                  |
| <i>Madras.</i>                           | { 2 Batteries of Horse Artillery, ... ..  | ...               | ...       | 12                  |
|                                          | { 10 Field Batteries, ... ..              | ...               | ...       | 66                  |
|                                          | { 1 Heavy Field Battery, ... ..           | ...               | ...       | 3                   |
|                                          | { British Regiments of the line, ... ..   | 2                 | 9         | ...                 |
|                                          | { Native Regiments of the line, ... ..    | 4                 | 41        | ...                 |
| <i>Bombay.</i>                           | { 2 Batteries of Horse Artillery, ... ..  | ...               | ...       | 12                  |
|                                          | { 10 Field Batteries, ... ..              | ...               | ...       | 60                  |
|                                          | { 1 Heavy Field Battery, ... ..           | ...               | ...       | 3                   |
|                                          | { British Regiments of the line, ... ..   | 1                 | 7         | ...                 |
|                                          | { Native Regiments of the line, ... ..    | 3                 | 30        | ...                 |
|                                          | { Poonah Horse, .. ...                    | 1                 | ...       | ...                 |
|                                          | { Sind Horse, ... ..                      | 3                 | ...       | ...                 |
| Total number of Regiments and Guns, ...  |                                           | 491 $\frac{1}{2}$ | 190       | 388                 |
| Average strength of Regiments .. ...     |                                           | 480               | 800       |                     |
| Total number of men, ... ..              |                                           | 23,760            | 152,000   |                     |
| Grand total, ... ..                      |                                           | 175,760           |           |                     |
| Average number of Guns per 1,000, ... .. |                                           | 2.2               |           |                     |

Table No. 3.

Showing the comparative cost of a Garrison Battery of Royal Artillery as at present constituted and as proposed.

|                           |                                             | AS AT PRESENT. |                                   |       |     | AS PROPOSED. |                                   |       |    |                                |   |
|---------------------------|---------------------------------------------|----------------|-----------------------------------|-------|-----|--------------|-----------------------------------|-------|----|--------------------------------|---|
|                           |                                             | Number.        | Total Pay for a month of 30 days. |       |     | Number.      | Total Pay for a month of 30 days. |       |    |                                |   |
|                           |                                             |                | Rs.                               | A.    | P.  |              | Rs.                               | A.    | P. |                                |   |
| Officers.                 | Captain, ... ..                             | 1              | 433                               | 10    | 0   | 1            | 433                               | 10    | 0  |                                |   |
|                           | 2nd Captain, ... ..                         | 1              | 417                               | 7     | 8   | 1            | 417                               | 7     | 8  |                                |   |
|                           | Lieuts., increased pay                      | 2              | 531                               | 8     | 0   | 3            | 797                               | 4     | 0  |                                |   |
|                           | „ lower rate, ...                           | 1              | 213                               | 5     | 0   | 1            | 213                               | 5     | 0  |                                |   |
| N. C. O. and Men.         | Sergeant Major, ...                         | 1              | 52                                | 15    | 4   | 1            | 52                                | 15    | 4  |                                |   |
|                           | Qr. Mr. Sergeant, ...                       | ...            | 0                                 | 0     | 0   | 1            | 52                                | 15    | 4  |                                |   |
|                           | Sergeants, ... ..                           | 4              | 156                               | 11    | 8   | 6            | 235                               | 1     | 6  |                                |   |
|                           | Corporals, ... ..                           | 4              | 117                               | 8     | 8   | 4            | 117                               | 8     | 8  |                                |   |
|                           | Bombardiers, ... ..                         | 4              | 107                               | 12    | 0   | 4            | 107                               | 12    | 0  |                                |   |
|                           | Trumpeter (Bomr.)..                         | 1              | 26                                | 15    | 0   | 1            | 26                                | 15    | 0  |                                |   |
|                           | „ Gunners, ... ..                           | 1              | 16                                | 3     | 7   | 2            | 32                                | 7     | 2  |                                |   |
|                           | Gunners, ... ..                             | 60             | 973                               | 7     | 0   | 120          | 1,946                             | 14    | 0  |                                |   |
|                           | Command allowance,...                       | ...            | 60                                | 12    | 0   | ...          | 120                               | 0     | 0  |                                |   |
| Mess allowance, ...       | ...                                         | 40             | 0                                 | 0     | ... | 50           | 0                                 | 0     |    |                                |   |
| Native Es-<br>tablishment | Pay Sergeant, ... ..                        | ...            | 10                                | 0     | 0   | 1            | 52                                | 15    | 2  | { Effective Non-<br>Combatant. |   |
|                           | Tindal, ... ..                              | 1              | 7                                 | 8     | 0   | 1            | 7                                 | 8     | 0  |                                |   |
|                           | Store Lascars, ..                           | 6              | 36                                | 0     | 0   | 8            | 48                                | 0     | 0  |                                |   |
|                           | Tent „ ... ..                               | 2              | 11                                | 8     | 0   | 0            | 0                                 | 0     | 0  |                                |   |
| Ser-<br>vants.            | Puckallees, ... ..                          | 2              | 18                                | 0     | 0   | 3            | 27                                | 0     | 0  |                                |   |
|                           | Sweepers, ... ..                            | 2              | 8                                 | 0     | 0   | 3            | 12                                | 0     | 0  |                                |   |
|                           | Bheestee, ... ..                            | 1              | 5                                 | 0     | 0   | 2            | 10                                | 0     | 0  |                                |   |
|                           | Sweepers, ... ..                            | 3              | 12                                | 0     | 0   | 4            | 16                                | 0     | 0  |                                |   |
| Hospital Establishment.   | Asst. Apothecary, ...                       | 1              | 100                               | 0     | 0   | 1            | 100                               | 0     | 0  | only on service                |   |
|                           | Hospital Apprentice, ...                    | ...            | 0                                 | 0     | 0   | ...          | 0                                 | 0     | 0  |                                |   |
|                           | Compounder, ... ..                          | 1              | 10                                | 0     | 0   | 1            | 10                                | 0     | 0  |                                |   |
|                           | Dresser, ... ..                             | ...            | 0                                 | 0     | 0   | 1            | 8                                 | 0     | 0  |                                |   |
|                           | Steward's Servant }<br>& shop coolie, ... } | 1              | 6                                 | 0     | 0   | 1            | 6                                 | 0     | 0  |                                |   |
|                           | Bheestees, ... ..                           | 1              | 5                                 | 0     | 0   | 2            | 10                                | 0     | 0  |                                |   |
|                           | Sweeper, ... ..                             | 1              | 5                                 | 0     | 0   | 2            | 9                                 | 0     | 0  |                                |   |
|                           | Cooks, ... ..                               | 1              | 5                                 | 0     | 0   | 2            | 10                                | 0     | 0  |                                |   |
|                           | Sirdar Coolie, ... ..                       | ...            | 0                                 | 0     | 0   | 1            | 6                                 | 0     | 0  |                                |   |
|                           | Coolies, ... ..                             | 2              | 8                                 | 0     | 0   | 4            | 16                                | 0     | 0  |                                |   |
|                           | Mate Bearer, ... ..                         | 1              | 5                                 | 0     | 0   | 1            | 5                                 | 0     | 0  |                                |   |
|                           | Bearers, ... ..                             | 3              | 12                                | 0     | 0   | 3            | 12                                | 0     | 0  |                                |   |
|                           | Washer-men, ... ..                          | 1              | 5                                 | 0     | 0   | 2            | 10                                | 0     | 0  |                                |   |
|                           | Total Pay per month, ...                    |                |                                   | 3,417 | 3   | 11           | ...                               | 4,979 | 11 |                                | 0 |

{ Effective Non-Combatant.

only on service

## II.

**Remarks on the Organisation of Native Infantry.**

THE present organisation of a Battalion of Native Infantry of the Bengal Army is as follows :—

|            |                                                    |                     |
|------------|----------------------------------------------------|---------------------|
| 1          | Commandant.                                        |                     |
| 1          | 2nd in Command                                     | } Commanding Wings. |
| 1          | Wing Officer                                       |                     |
| 2          | Wing Subalterns.                                   |                     |
| 1          | Adjutant.                                          |                     |
| 1          | Quarter Master.                                    |                     |
| 1          | Surgeon.                                           |                     |
| Total, 8   | European Officers.                                 |                     |
| 8          | Subadars.                                          |                     |
| 8          | Jemadars.                                          |                     |
| 40         | Havildars.                                         |                     |
| 40         | Naicks.                                            |                     |
| Total, 96  | Native Commissioned and Non-Commissioned Officers. |                     |
| 8          | Companies of 75 men each.                          |                     |
| Total, 600 | Sepoys.                                            |                     |

There are I think great objections to this organisation.

1st.—The unnecessary subdivision of the Battalion into so many companies.

2nd.—The superfluity of Officers, disproportion of the ranks, and consequent number of idlers.

With regard to the first, I believe it is admitted that the Native of India does not, as a rule, make a good superior Officer. However efficient in the simple strict routine duties of a Non-Commissioned Officer he may have been, he is no sooner called upon for the display of firmness and integrity, than he fails, and this, in the present system of promotion by seniority, is only discovered when too late, when a bad or indifferent Native Officer has been established in the Regiment.

But there are also in every Regiment a few bright exceptions to this rule, men of character and energy.

It is, therefore, I think desirable that the men of a Native Regiment should be collected in as large numbers as practicable, under the supervision of a few able and influential Officers, instead of being as at present, in small companies subjected to the bad example and injurious action of twice or three times the number of bad or indifferent ones.

A Battalion of 600 Natives should not be divided into more than four companies, two in each wing.

The supervision would be then concentrated and increased, the

details of duty simplified and more readily carried out, and there would be a saving of expense to Government. In field movements also, by the new system of drill, a Battalion of a few strong companies works far more readily and with much less noise, than one frittered away in small divisions, each shouted at with a corresponding number of cautions and words of command.

With regard to the 2nd objection: if 4 companies are a sufficient division of a Battalion it is clear that half of the present number of Native Officers is superfluous, but I would go further and say two-thirds of the Native Commissioned Officers are mere puppets, and are really of no use in the Regiment, whether from, (as before stated) want of character, or being Jemadars from their position.

Jemadars do nothing, and for the most part are content with saving as much money as they can between the hour of their promotion and the day on which they can obtain a good pension.

They are, therefore, mere idlers in a Regiment.

Wing Subalterns, at present, having no duties assigned to them in the Regiment, are idlers as far as it is concerned.

The duty states of any Corps show that Havildars are much more lightly worked than the Naicks who have more duty to perform than any other rank.

In a new organisation, therefore, the number of the former might be reduced, but the latter should be kept at their present strength, supplemented by half the number of paid Lance Naicks.

I will now propose a reorganisation of the Native Infantry which I think would be superior to the present in that—

1st.—European Officers at present unemployed would have regular duties to perform.

2nd.—There would be no idlers.

3rd.—The ranks of Officers would be in proportion to the duties.

4th.—There would be a saving of expense to Government.

#### PROPOSED ORGANISATION.

1 Commandant as at present.

1st Battalion Officer,—2nd in Command and Wing Officer as at present.

2nd Battalion Officer,—Wing Officer Commanding left wing as at present.

3rd Battalion Officer,—to command 1 Company of 150 men with an allowance of Rs. 100 per mensem as now drawn by Wing Subalterns.

**4th Battalion Officer,—To Command 1 Company of 150 men with an allowance of Rs. 100 per mensem as now drawn by Wing Subalterns.**

**5th Battalion Officer,—Ditto ditto ditto.**

**6th Battalion Officer,—Ditto ditto ditto.**

**1 Adjutant.—As at present.**

**1 Quarter Master.—As at present.**

**1 Surgeon.—As at present.**

**Total 10 European Officers.**

**4 Subadars as at present 1st and 2nd Class.**

**4 Color Havildars to be carefully selected and well educated men, keeping the accounts and working the details of the Company, at Rs. 30 each.**

**20 Havildars at Rs. 20 each.**

**40 Naicks at Rs. 15 each.**

**20 Lance Naicks, Sepoys on probation for promotion with an increase of Rs. 2 on Sepoy's pay.**

**600 Sepoys as at present.**

I should say that in this organisation, promotions should be more by selection than by seniority.

The Lance Naicks and Color Havildars especially should be carefully chosen.

The Native Commissioned Officers, being few in number and taken from the Color Havildars, would be men accustomed to work, able to read and write, in fact men of energy and ability and would be respected by, and would have influence with, their European Officers, who, in their turn, no longer listless and unemployed, would take an interest in their Companies; and by their firmness of character, intelligence and knowledge of musketry (in which, by the way, each one should have a certificate from the Instructor of a European Regiment,) would be of great benefit to the Regiment.

In the above system I would recommend that the colors should be abolished, or at least reduced to one. In the Umbeyla campaign no Regiment had its colors, and the want was never felt.

Finally, I would recommend in connection with this plan of reorganisation, that the term for which the men are at first engaged should be extended to four or even five years, and that the first good conduct rupee should be given at the completion of the first term of service, when every man should be again enlisted for not more than three years, and so on, getting an extra rupee each term.

That the invalid Pension Rules should be altered, the first being as at present, the second compulsory after a fixed term of service, say 26 years.

I will only add that if the composition of each of these four companies were carefully attended to, for instance, one being of Sikhs, one



of Pathans, one of Dogres, one of Hindustanis from Oudh, and all carefully recruited, I should imagine the army very compact and useful. Government would have the power of increasing or reducing troops, of certain nationalities, in most districts at a day or two day's notice, to any extent into well organised Companies, that could be arranged into Battalions as circumstances might require on the spot, without the least delay or trouble.

Since writing the above it has struck me that should the abolition of the rank of Jamadar be considered too violent a change, the working man of the Company might be called Jamadar instead of Color Havildar.

C. C. G. ROSS, *Colonel,*  
*14th Native Infantry.*

| PRESENT ORGANISATION. |                                                                    |              |       | PROPOSED ORGANISATION. |                                                                    |               |       |
|-----------------------|--------------------------------------------------------------------|--------------|-------|------------------------|--------------------------------------------------------------------|---------------|-------|
| Number.               | RANK.                                                              | Total Amount |       | Number.                | RANK.                                                              | Total Amount. |       |
|                       |                                                                    | Rs.          | A. P. |                        |                                                                    | Rs.           | A. P. |
| 2                     | First Class Subadars at ... Rs. 100 each                           | 200          | ...   | 2                      | First Class Subadars at ... Rs. 100 each                           | 200           | ...   |
| 2                     | Second ditto " " 80 "                                              | 160          | ...   | 2                      | Second ditto " " 80 "                                              | 160           | ...   |
| 4                     | Third ditto " " 67 "                                               | 268          | ...   | 4                      | Color Havildars " " 30 "                                           | 120           | ...   |
| 4                     | First Class Jemadars " " 37 "                                      | 140          | ...   | 20                     | Havildars " " 20 "                                                 | 400           | ...   |
| 4                     | Second ditto " " 30 "                                              | 120          | ...   | 40                     | Naicks " " 15 "                                                    | 600           | ...   |
| 40                    | Havildars " " 14 "                                                 | 560          | ...   | 20                     | Lance Naicks at Rs. 2 in addition to Sepoy's pay " " " " " "       | 40            | ...   |
| 40                    | Naicks " " 12 "                                                    | 480          | ...   |                        | Allowance of two European Battalion Officers " " " at Rs. 100 each | 200           | ...   |
|                       | Color and Pay Havildar's allowances in 8 Companies ... .. at Rs. 7 | 56           | ...   |                        |                                                                    |               |       |
|                       | Grand Total Rs. ... ..                                             | 1,984        | ...   |                        | Grand Total Rs. ... ..                                             | 1,720         | ...   |
|                       | Difference Rs. ... ..                                              | 264          | ...   |                        |                                                                    |               |       |

Difference of expense monthly in favor of proposed Organisation Rs. 264 per Regiment.

The above statement shews the exact difference in the monthly expense. All ranks and establishments not mentioned above, being left as they are at present.

## III.

**The Mitrailleur as a Weapon for India.**

THE point I wish to bring to the notice and consideration of my brother Officers, in the following paper, is my belief in the suitability of the Mitrailleur as a weapon adapted to the general conditions of warfare in India. In support of this view I have instanced the only well authenticated occasion of its use in the Field during the late Franco-German war, but it is not so much with the intention of pressing its merits as a weapon in the Field that I have done so, but by showing its great defensive power. I have attempted to point out that by arming our Fortresses with this weapon, we should have a larger force for offensive warfare at our disposal.

Not having seen any of the reports of the competitive trials at Shoeburyness, which were being carried on at the end of last year, I am unable to give any tabular statement as to the comparative targets of these Machine guns and those of the rifled Field guns and breech-loading rifles with which it competed; but as I believe the principle to be a correct one, I should not consider the result of these trials, (even if altogether unfavorable to the Belgian Montigny Mitrailleur, the one experimented on,) to be so detrimental as not to warrant further experiments being carried on, till the particular rifling of the barrel; diameter and weight of the bullet; and the quality and weight of the charge that would give perfectly satisfactory results, were obtained.

The French adopted the name of "Mitrailleur" for their weapon and retained it even after the introduction of the Belgian "Mitrailleur" into their service. In the paper, I have adhered to the latter name as being the original one, except when specially referring to the weapon used by the French, when for the sake of clearness I have retained their nomenclature.

Notwithstanding the many scenes of blood and butchery, that have occurred since July 1870, in which the Mitrailleur has had a share, I cannot help reverting to the first public trial of the effect of the fire of this weapon, as reported in the newspapers of that day.

The trial was carried on, as some may remember, against a group of unfortunate knacker's horses. The result of this inaugural trial led the way to that confident expectation of its wonderful success, as an offensive weapon of war, which formed in a great measure the source of that certainty of victory which the French Army then possessed. The Mitrailleur could sweep off a group of horses at a range of about 1,000 yards (if I remember right) in a few discharges, and naturally, it was to be expected that its use in the Field would produce similar results.

Let us see how far the action of the weapon has justified the expectations that were then formed. Up to the Capitulation of Sedan, there were only three battles, in which its use was reported. Doubtless there were many other occasions in which it must have been used,

but I have not been able to find any record of them. Nor are they mentioned in an article on the *Mitrailleur* which was published in the *Times* of September 8th, 1870.

The battles of Saarbruck, Wissembourg and Worth, at the beginning of the Campaign, in which the destructive power of the *Mitrailleur* should have been made so manifest, as to strike terror into the Prussians, only brought the weapon into disrepute by the latter, and its want of success must have acted prejudicially on the French Army, who had already begun to lose their *morale* in these successive defeats.

The cause of this failure it is not difficult to understand. In their anxiety to bring the weapon prominently forward, it was made to do work for which it was not suited, and when Artillery fire ought to have been used.

At Saarbruck, it was used chiefly at long ranges from the top of a precipitous hill, where the configuration of the ground prevented its use at short ranges, so as to prevent the position from being carried; and at Wissembourg and Worth, it was used against the troops concealed up to the moment of their attack in dense woods. In the first of these battles the position was not a well selected one, either for Artillery or *Mitrailleurs*; but the former would have made more impression at the long ranges, and in the other battles, shell fire, which could have penetrated into the woods, would have been evidently more destructive.

The German accounts of the battles praised the bravery of their troops, who had faced the fire of these machine guns, but all details of the loss they suffered from them was carefully kept unknown, and soldiers, after having captured a few, were taught to hold them in low estimation.

Most of the correspondents of the newspapers bore testimony to the fact that, where the bullets did strike they were more effective, in permanently disabling the wounded, than the bullet wounds of the Chassepot Rifle, which only kept the wounded a few weeks in Hospital.

It is thus, from the battle of Gravelotte, the last general engagement before Sedan, that we can learn how far the use of the *Mitrailleur* was of assistance to the French; and to do this, I will extract the short summary of the battle as given in the article in the *Times* that I have before referred to, which is taken from a description of the battle by the correspondent of the *Daily News*, who was present with the German Army on that occasion.

"The French were in position behind breast-works on a hill; their Artillery was planted some distance in rear. The *Mitrailleuses* appear to have been in line with the foremost works. The Prussians prepared their attack with a cannonade of 120 guns, and after half an hour's firing, the 33rd Prussian Regiment "dashed up the hill."

When they got half way up, *Mitrailleuses* opened upon them, and did terrible execution at close quarters. The men, however, pressed on,

though they literally fell by hundreds. They struggled on, and actually succeeded in forcing an entrance into the works. But the Mitrailleuses were not taken. Their lightness enabled them to be run back quickly some 400 yards, and then opened a tremendous fire from them and the guns, which had never been brought forward. The Prussians in their advance had pushed a half battery half way up the hill, but the Mitrailleuses fired so quickly and so well, that the 33rd were driven from the trenches so hardly won; the Mitrailleuses followed their retreat and inflicted terrible losses on them. The half battery tried to reply, but was overpowered and unable to retreat, because all its horses were killed. Then the Prussians, according to their system of sacrificing masses of men to gain their purpose, sent Cavalry at the hill to take it. In vain men and horses rolled over in the narrow road and they were in their turn compelled to retire. A cloud of skirmishers was next sent forward from the 67th Regiment of the line. The "men, well taught," crept from bush to bush, and from rock to rock, taking advantage of the slightest inequality of ground, to shelter themselves." A tremendous fire of Artillery supported their advance, and once more columns of troops were driven up the road, at the position. The brave soldiers got into the works, but the French fire was so terrible that they had to retire again. At half past 5, the Prussians seem to have run short of ammunition, for they desisted from the attack, and more cartridges and Artillery were brought up. A farm house, La Villette, had been made into a strong position by the French, and commanded the hollow road, so a heavy fire of Prussian guns was brought on it till all their ammunition was exhausted, and at half past six their fire almost ceased. The quarter of an hour was spent in refilling the empty boxes and once more the cannonade began. La Villette caught fire, but the French still held the garden. At 7-20 the final attack began, the 72nd Regiment changed the slope, followed soon after by a Regiment of Hussars. After more than an hour's fighting in the dark, the French began to retire, the Mitrailleuses protecting their retreat. The letter of our Berlin correspondent shows that the carnage in this action had been frightful. In some cases nearly half the attacking Regiments had been killed and wounded."

Another quotation from the letter of a Prussian Officer taken from the same article, will show that the above estimate of loss must have been rather under the mark. He writes:—"The 1st Regiment of Dragoon Guards went first into fire, and were so slaughtered that only 120 men were left. The 2nd Dragoons were taken up to make up the number of the 1st and were in their turn cut down."

Though not mentioned in the short summary of the battle above given, the breast-works on the hill side were formed with a trench in rear, so that the Mitrailleuses which were placed in them were sunk up to the level of their muzzles, thus offering such a slight object to aim at, that all the effect of the "direct" Prussian fire could not silence them, nor was it till the position was turned by the Germans and the trenches were being raked by their fire, (this also is omitted in the account above given) that the direct attack which was last made, succeeded.

It is from this battle alone, that we can form an estimate of the capability of the *Mitrailleür*, and in this, its superiority as a defensive weapon on properly selected ground, stands prominently forward. The Germans began the cannonade a little after 11 o'clock, and from that time till after dark kept sending on fresh column after column of attack, but none of these succeeded even by sheer weight of numbers as in former engagements, in taking and keeping the position.

The chief difference between this and the previous battles, lay in the selection of the position, which was properly chosen, and further strengthened by field entrenchments, and was besides well defended.

The *Mitrailleuses* were on the slope of the hill, and the Artillery from the description above given must have been well placed, for the slope of the hill, not being too steep for Artillery fire, allowed every shot to plough its way through the advancing column, whose path was marked by a dark trail of wounded, till the columns were obliged to retire, suffering double loss on their way back.

It is not too much to accord the greater part of this execution to the fire of the French *Mitrailleuse*, as this was the only battle where its services are distinctly recorded; in the previous engagements, the French Armies, though beaten on each occasion as they were on this, were not able to make such a stand against the overpowering attacks of the Germans. They fought equally well, (that is the Artillery and Infantry) for a time at each of the other battles, but they were driven off the field by the numbers of men brought forward by the Germans. Yet at this battle of Gravelotte, they were able to stand their ground all day and retreat forwards Metz under cover of the night. Clearly then, their effective use of the *Mitrailleuses* counterbalanced the preponderance in number of the Germans.

The question of their use in attack must be left for the next occasion, on which they are used with an attacking force, to be solved practically in the field; but I should think that under certain circumstances they could be used most advantageously. The Prussian Armies did not however use them, (I think the Bavarian army had some, but they never came sufficiently under notice for their doings to be recorded,) and though after the capitulation of Sedan, they could have turned out at least fifty of these weapons, armed and equipped as they had taken them, if they had wished to do so, yet it must be remembered that the Prussian Generals relied on their numerical superiority, and were not averse to losing men as long as their objects were gained. They were always the attacking force, and would not have gained much advantage, by the introduction of a defensive weapon, with which they were unacquainted, in the middle of a campaign.

In the present age of machinery, everything that tends to economize manual labor is considered an improvement; and we find in the Navy, and more especially in the merchant service, that steam power is applied to nearly every purpose which in former days required manual labor. The reduced Navy estimates are a source of congratulation to

the British tax payer who is called on to pay less for a more efficient Navy than formerly.

Of late years the Army has not been able to accommodate itself to the interests of the tax payers in the same way. Every alteration has been the cause of increased expenditure, without the corresponding benefit that was expected. For instance the last proposal, that no man under twenty should be sent to India, involves the expenditure of a pound on every volunteer, above that age, who will serve out here.

If this proposal be carried out, as I believe it will be, the first practical result that will arise will be a scarcity of men for service in India; and then in all probability will follow the formation of an army of India. Notwithstanding the speedier communications of the present day, as compared with the old days of the East India Company, there will still remain the problem to be solved of how to keep the British Army in India up to its full strength. Under the present system we are not able to gloss over this difficulty, as under the East India Company's regime, when for instance the number of gunners was supplemented by a detachment of Gun Lascars, and most of the field batteries were driven by natives.

In addition to the want of men to meet the ordinary demand for casualties, another consideration offers itself as an essential one, in the question of supplementing the numbers of the Army in India with machine guns like the Mitrailleurs. Unfortunately very few seasons in India pass without an epidemical attack of some kind. It is true that as many regiments as can be spared from the duty of defending the various positions in the plains, are sent to the hills, but by the introduction into the service of the mitrailleurs, the fortresses could be held with a fewer number of men, and thus enable more regiments to be located in the hill stations. This consideration, as affecting the general health of the troops, is one that ought to carry a great deal of weight in favour of the machine guns, if it can be shown that the defence of a fortress could safely be left to the small number of men necessary to manage the Mitrailleurs.

The Army of India has for its first duty, the defence of the country against internal disturbances rather than external ones, and is therefore a purely defensive Army. The few wars that have occurred of late years, on the various frontiers, have not been on a sufficiently large scale, to change this designation into an "aggressive" or "offensive" force. When however, the time may come for it to undertake active operations on a large scale, its strength will not be found quite equal to the double duties of attack and defence, I am referring to the British Army in India, as it is only to a portion of this Army that the defence of the arsenal and fortresses could be safely entrusted while the remainder are in the Field.

The extension of the Railway system too in India will form, in addition to the arsenals and fortresses, more strategical points than can be left to the sole defence of the Railway Volunteers.

With the number of men available it may be taken for granted that, not more than one regiment, assisted perhaps by a Garrison Battery, would ever be detailed for the defence of a fortress.

How far this would suffice for the defence of a fortress like Fort William may be seen, when the interior line of defence extends for more than a mile, and the exterior line of the covered way for about two miles. It would take at least ten regiments to man this extent of parapet, not counting the number of Gunners necessary for managing the guns mounted on the ramparts. Supposing now that the fronts and ditches were armed with Mitrailleurs, each one requiring three men to work it: if one man can fire off 37 barrels at once, he is for all defensive purposes equal to thirty-seven men; and though it takes three men for the effective management of the weapon, yet to be able to increase one defensive power in a ratio of 12 to one, is an advantage that ought not to be thrown away. Supposing the main ditches to be protected by these weapons, placed in (casemated) "Caponieres," the defence of the outer line of works might almost safely be abandoned, as the probability of a column attacking by storm, being able to cross the ditch before destroying the casemate, would be very slight.

If it be possible in time of war, by the aid of these machines, to enable one regiment to be equal for defensive purposes to twelve, in time of peace where a Garrison of a regiment has been considered absolutely necessary hitherto, at least two-thirds of the men could be withdrawn from the plains, the remaining third being, with the aid of their Mitrailleurs, fully equal to the defence of the post till relieved.

In the field, as I have written before, its practical use has to be discovered; but it must be borne in mind that its introduction into offensive warfare does not date from the late war, but that the original idea came over from America, where it was introduced towards the end of the Federal Campaign. I am unfortunately unable to quote any instances of its employment in that war, but the conclusion may be drawn, that the principle, not the gun, was adopted by the French on sufficiently satisfactory data to warrant the experiment.

As long as an enemy's Artillery can be brought into the field against us, it is necessary to have a better organized and more powerful Artillery to cope with it, and this will ever prevent the supersession of Field Artillery. A glance at the possible enemies that we may have to deal with in India shows only a few large territorially independent princes, who are able to keep up anything like an organized Artillery service, in addition to their disciplined regiments; but the greater portion of any internal enemy's force would consist of Light Cavalry and Infantry, and I see no reason why in the open plains of India, a well directed fire of Mitrailleur barrels should not be more effective against a mass of men than the fire of Infantry soldiers, especially at the beginning of an engagement in an open country: mobility of these weapons would enable them to protect (with the assistance of Artillery fire) all the preliminary



movements and dispositions of the troops, affording time for the latter to be effectively carried out.

It is well, however, to adduce the authority of an old soldier on this point rather than to submit any hypothesis of my own ; and I will conclude this paper by quoting an extract from a letter written to the *Army and Navy Gazette* in July 1866, by the late Sir John Lillie, K. C. B., who at the time of the Crimean war invented a somewhat similar machine gun, but was unable to get it introduced into the service. His invention consisted in placing six or more revolving rifles on a light platform cart ; these could be fired by turning a handle. A second set of chambers were to be loaded, while the first were being discharged ready to replace them, each chamber containing 20 charges ; thus enabling 120 rounds to be fired in about a minute.

From the abovementioned letter I extract the following :—

“From my experience in command of a Rifle Corps under the late Duke of Wellington, I have pointed out the advantages of firing from a rest, owing to the quantity of ammunition uselessly expended in action from the want of steadiness in the mode of firing Musketry, and the constant movements of troops loading and firing while in a state of great excitement, with fixed bayonets, and without that steady support so essential in the act of firing to keep the barrels at their proper level ; the consequences of which have been, that scarcely one shot in several thousands has taken effect, as proved by the comparisons made in various Armies, between the quantities of ammunition expended in general engagements and the return of killed and wounded.

“In proof of the advantages of attaching rifle barrels, as well as pieces of heavier metal, to gun carriages, the superiority of Artillery over Infantry in striking objects in action, although at much greater distance, may be instanced ; as, notwithstanding muskets being generally depressed or raised to a greater elevation than that at which field pieces are fired, the bullets either mostly fall short of their object or pass over the enemy's head, whereas a cannon ball seldom or never strikes the ground till it reaches the object aimed at ; facts which ought to have operated on the minds of the Ordnance Committee in favor of placing small arms in like manner on gun carriages, as thus recommended, which could thus be easily transported on the backs of horses or mules in mountainous countries, when field pieces could not be employed.

“The late Lord Herbert came to my house to see one of the above mentioned Batteries, with which he seemed much pleased, more particularly when I shewed him a letter from Major Vandeleur of the Artillery, under whose care one of these Batteries had been placed for trial at Woolwich, and who was so satisfied with the results, that he said that if he had had forty or fifty of them at the battle of Inkerman, where he was engaged, the havoc on the dense columns of Russians which closed on our troops would have been enormous, as in such a dense mass at close quarters a rifle ball would have passed through several men.”

Had Sir John Lillie been alive during the late war he would have had abundant confirmation of the principle he advocated, of the advantage of firing rifle barrels from a fixed rest.

I do not feel so sanguine as to the use of these machine guns in mountain warfare, as the talented inventor was ; but it must be remembered that he was comparing the efficacy of his Battery, as he terms it, with either its advantage compared to the total absence of Artillery, or with such mountain guns as existed in his days. Since the time that his letter was written (1866) a rifled mountain gun has been introduced into the service, and found to answer in the Abyssinian campaign in every requisite. For the special defence of defiles and in some cases perhaps for outlying picquets, no doubt a Mitrailleur would answer admirably.

I venture to hope that this paper may have the effect of directing attention to the class of machine guns, like the Mitrailleur ; and that experiments may be carried out in this country not so much with a view of testing their comparative effects with regard either to Field Artillery or Infantry fire, though this would be useful enough in forming data to carry on practical trials, but it would be preferable perhaps to have their merits decided on their own special capabilities. When once these are clearly established, as I believe they will be, the time will not be far distant when every fortress will be strengthened by their introduction, and every division and brigade will have its batteries of Mitrailleurs.

JAMES COLQUHOUN,

*Lieut. (Local Capt.) R. A.,*

*Commissary of Ordnance.*

## OPINIONS.

## I.

**On Articles I and III in Proceedings No. 1.***Memorandum on Soldiers' Dress, European and Native Infantry.*

HAVING read the two essays, one by "Common sense," the other by Lord Lyon, in No. 1 of the Proceedings of the U. S. Institution of India, I beg [to suggest one article of dress for the British Private's comfort and health and the consequent advantage of the State.

For head dress a Sola Helmet  $\frac{3}{4}$  or 1 inch in thickness, strengthened inside by 3 or 4 thin strips of cane crossing at the top, covered outside with thin American Drill or Jean, and painted with oil paint; this can be of course of any color, white, drab, ochre, green, &c., and could be applied under Regimental arrangements.

The ventilation, as usual in Sola Hats; one so protected with paint, is impervious to drenching rain such as falls during the rains in India. I have seen such used out boating in the sun and rain in the season just mentioned, and therefore think there can be no head cover equal to it under *all* circumstances, for with a pugree neatly bound round, say of the color of facings of Regiment, it would look very neat.

Such Helmets could be made of any desired shape, and if required in large numbers could doubtless also be supplied cheap. There would be no harbour for bugs in them.

I would suggest that on a march a pair of light shoes, almost slippers, be carried (always, when a soldier wears his haversack;) they would be of very great comfort if men were allowed to put them on directly after a march, *even if they were on duty in camp*, as they could at once dry, and if necessary, grease and soften their boots. After a wet, muddy march, this would be a great boon and advantage.

No blacking tins or brushes are *wanted* on hard service; 1,000 pair of brown boots are as much uniform as 1,000 pairs of blacked ditto: greased boots throw off the wet; they are likewise soft, and being once greased, are unlikely to get hard quickly. Superfluous grease should of course be rubbed *off* simultaneously with rubbing it in. As soldiers are either not smart, smart, or very smart, in the matter of boots with blacking, so would it be with boots without blacking.

In the field or on hard marching, men have not much time or inclination to lay on *pipe-clay*. Buff belts would not *look well* without it, but buff belts absorb rain and then get soft and pull out, and get out of shape. Why not have brown leather; a very little "moom-roghan" well rubbed into (and any superfluous quantity rubbed off) would cause it to throw off the rain, and the belts would be less likely to pull out of shape.

I would also suggest that brown leather would be the best material for the gaiter.

For every Infantry soldier, *European and Native*, (except the Goorkhas who carry a "Kookree,") I would have a short heavy weapon to perform the many duties about camp or service; blade about 10 inches long, to be worn at back, over the left buttock, in a sheath.

Let each soldier have a couple of pockets, either in coat or in trousers, or in both; a flap to those in coat if outside. Let each man have light iron tips to his boot heels, and the soles well studded with sprigs, *wherever each man treads most*. A boot which has commenced to wear down at heel and cannot quickly be repaired, soon goes to the bad, and the wearer most likely gets footsore and lame. Let each man be instructed in the mode of bandaging his foot with a long strip of linen, cotton or thin woollen stuff, in case of his socks getting worn out, and in case of his getting galled.

When marching (in Kashmir) I have, after putting a needle with *worsted* in it (thread wont do nearly so well) through a blister, and thus running off the water, put a strip of an old pocket handkerchief round it, with a little grease (butter or ghee) over the rubbed part, and so marched the next day again without feeling the slightest inconvenience, and the place has become healed in a day or two after.

Gaiter, some 10 inches long, reaching to about 8 inches from ground (and clear of the ankle as in sketch,) up to within an inch of the bend of the knee joint. The 'pyjama' as now ordered.

*For cold weather*, I would have it made long enough to fasten also just above ankle as in Fig. 2 in sketch.

The gaiter to be worn either with 'pyjama' fastened under knee, "a la Zouave," or over the ankle and worn under the gaiter, where warmth and protection (from rain, &c., as from jungle and thorns,) are both required.

Shoes of brown leather and of a native shape, coming more over the instep than many, and like those worn by Kabullees and men about Peshawur, stout made, and with tips to the heels. 1,000 pairs of such would look as uniform as 1,000 pairs of boots of English pattern.

Let a man wear what he can work and walk in. *For a native, a native shoe*, which he can kick off to rid himself of mud or dust. Native soldiers dont wear socks, as they cant generally afford them.

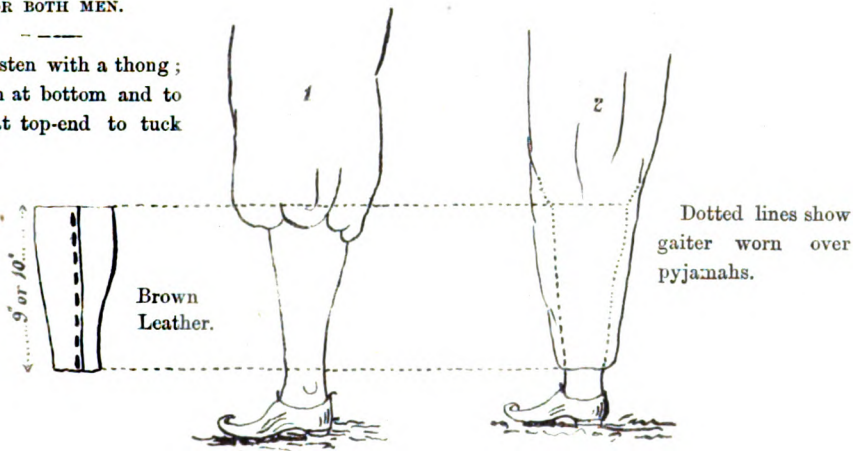
H.

## NATIVE FOOT SOLDIER.

### GAITER

FOR BOTH MEN.

To fasten with a thong ;  
sewn on at bottom and to  
fasten at top-end to tuck  
inside.





## SELECTIONS.

## I.

## Notes on the Vaziris.

THE following account of our turbulent yet gallant neighbours the Vaziris may be interesting to the Members of the United Service Institution of India. It is very difficult to get accurate information about these border tribes, and the writer would therefore claim for this account the indulgence of his readers.

The Vaziris are descended from Vazir, son of one Sūlimān. Vazir had two sons, 1 Khizrī, 2 Lali; Khizrī had three sons, 1 Mūsa, 2 Mahmūk, 3 Mubarak; Mūsa had two sons, 1 Utmān, 2 Ahmad, from whom are descended the Utmānzāes and Ahmadzāes, sometimes unitedly called Darvēsh Khēl. Mahmūd had a son called Maḥsūd, from whom are descended the Maḥsūds, and from his two sons, 1 Alī, 2 Balōl are the two grand divisions of the clan, *viz.*, 1 Alizāes, 2 Balōlzāe. Mubarak had a son called Gūrbāz, from whom are descended the Gūrbāz Vaziris, with whom we have little to do. (There are a few camps of them in the Tochī Pass.)

From Lali, second of Vazir, are descended the Lali or Leila Vaziris, inhabiting the slopes of the Sūfēdkōh.

The great branches of the Vaziris therefore are :—

- I.—Utmānzāe. II.—Ahmadzāe. III.—Maḥsūd. IV.—Gūrbaz.  
V.—Lali or Leila.

I propose to treat each separately.

The most northerly tribe is the Leila, then the Gūrbaz; but these I will notice after the first three of the above divisions.

The Utmānzāe are the most northerly of Vaziris with whom we have to deal.

They are divided thus :

|              |                        | (Clans,)        |              |
|--------------|------------------------|-----------------|--------------|
| Utmānzāe ... | Mahmūd or Mahmūt Khēl, | Hasn Khēl.....  | 3 divisions. |
|              |                        | Wūzī Khēl.....  | 8 "          |
|              |                        | Bārā Khēl.....  | 2 "          |
|              | Ibrāhīm Khēl .....     | Manzar Khel...  | 2 "          |
|              |                        | Mada Khēl.....  | 3 "          |
|              |                        | Torī Khel.....  | 6 "          |
|              | Valī Khēl.....         | Kābol Khēl..... | 3 "          |
|              |                        | Malikshāhī..... | 0 "          |
|              |                        | Bakī Khēl.....  | 3 "          |
|              |                        | Jānī Khel.....  | 2 "          |

The Mahmūd Khēl live in Ruzmak, Shum, on the Sukdas, and the Khasor.

Of these the Hasn Khēl live on the Kēti River, as do the Dūrdānī, an unimportant section.

The Wūzī Khēl live up to the S. W. of Dāwar.

The Bārā Khēl. (The whereabouts of this section is not known.)

The Manzar Khēl chiefly reside in the Margha at the head of the Tochī Pass W. of Dāwar, and in a portion of Shehrna.

The Mada Khēl inhabit the country near the Gon Mountain S. of Dāwar, a portion of Shehrna and of the Sheratala, a plain. They number 2,000.

The Torī Khēl are found in Ruzmak, in the Khasōr valley, parts of Shakhdū, and on the Sheratala plain. The Torī Khēl have never, I believe, given any trouble. Taylor mentions that they have a feud with the Mahsūds. They number 3,250. They have "Kiris" in the mouth of the Sakdū Pass.

The Kabal Khēl are divided into 1 Miami, 2 Saefali, 3 Pepali and number about 3,500 fighting men. They inhabit a part of Shawal, and (Miami section) the upper part of Shaki, and (Saefali and Pepalē sections) in the summer the Birmul valley and a part of the Sheratala plain, and a considerable portion of country on the East bank of the Kūram in the Khatak lands.

They are at feud with the Tūris, friends with Biland Khēl and enemies of Thal. The Tūris side with the latter.

The Kābal Khēl section of the Utmānzāe, inhabit the N. portion of the Vazīrī hills on both banks of the Kūram. They overlook the W. portion of Miranzāe and adjoin the Bahādur Khel sub-division of Kōhāt. They are a wild lawless set. They are always ready to join with the Turis, Zaemukhts, and Orakzaes, in any devilry or mischief. In the autumn of 1850, they signalled themselves by an audacious attack on Bahādur Khēl and its salt mines. They were promptly driven off. They had no reason, no provocation had been given, for this attack. A fort was then built at Bahādur Khel, that village being held in force till it was finished. The Kabal Khel gave all the opposition in their power, and constantly harassed the workmen, and on one occasion they attacked the village of Bahādur Khel, but were roughly handled by the villagers. From this time to 1854, they committed no less than 20 raids into the Kohat district and Khatak hills. They were then blockaded by Coke, and two parties of them with their cattle were seized. This brought them to their senses, and they paid a fine and gave hostages. After this they were more careful in their behaviour. But on the 5th November 1859, Captain Meehan of the Artillery was murdered near Latamr, by a party of Hatī Khel, Ahmadzae, Vaziris, who were traced to the Kabal Khel. They refused to surrender the murderers. Accordingly on the



20th December, a force consisting of 4,000 men and 13 guns collected crossing the Kuram at Thal and entered their country. Their encampment at Maidani 8 miles W. from Thal was burnt, and large stores of grain, together with some flocks of sheep, were captured. They showed some gallantry in defence, lost 50 men killed and wounded, our loss being 1 killed, 14 wounded. The Turis of Kuram assisted in the pursuit and plunder. The country on both banks of the Kuram was thoroughly explored and mapped by the Survey Officers. The Hasn Khel and Turis Khel on the banks became responsible for the apprehension of Zang, one of the murderers. The Gangi Khel section of the Ahmadzaes actually gave up one of their own clan who had harboured the murderers, and ultimately the principal murderer named Mohabat was given up by the Ahmadzaes and hanged. The troops remained about 20 days in the country of the Kabal Khels. The Kabal Khel were also mixed up with the Tazi Khel Ahmadzaes in an attack on the village of Thal in 1866, see Tazi Khel section.

Cavagnari, writing of the raid of the Vaziris in 1866 on the village of Thal, says, "on the other hand, the Kabal Khel have of late years given a great deal of trouble especially on the Banu frontier, and the account against them is long standing and heavy. Their trade is principally in the Khost direction, and they do not suffer as much as the other Vaziris by exclusion from trade with our territory. But they have very valuable crops (ripe in April-May,) beyond the village of Biland Khel and the destruction of these would inflict a loss of upwards of Rs. 20,000. In May they are almost isolated from the other sections, but in the autumn the other sections return to their settlements and the difficulty of punishing them is consequently much greater then."

About 300 of the Malik Shahis cultivate in British territory, being mixed up with the Jání Khél. The rest are situated in Shehr Khaní and the upper parts of Shawal and Shakí.

The Baki Khéls are all in British territory during winter. They are divided into 1 Sardi Khél, 2 Takhtí Khél, 3 Narmi which are again sub-divided into numerous sections. They number about 1,200 fighting men.

The Baki Khél go in summer to the lower parts of Shawal, their ancestral lands

The Baki Khél, says Taylor, have always been an excessively well behaved tribe, have paid their revenue regularly, and have not only refrained from plunder themselves, but have always refused a road to the evil disposed thro' their "Kiris." Urmston does not say anything contrary to this. The lands of the Takti Khél lie on the Miri sub-division on the N. bank of the Tochi River and round the Tochi out-post, and below it, opposite the Madan sub-division (Banu) on the S. bank.—The Sardi Khél lands lie in the centre of the large Thal between the Tochi out-post and the Jání Khél lands, and the lands of the Narmi Khél adjoin those of the Sardi Khél.

Thus the Baki Khél cultivate extensively on both banks of the Tochi and their grazing grounds extend from the Great Baran water-course opposite the Minálú Konai Range, into Dáwar, to the lands of the Jáni Khél near Vali.—They are responsible for the Tochi pass (in consideration of which they are allowed to have four Sowars in the Frontier Militia,) and for all the passes between the Baran and Khisor. And they are also responsible, jointly with the Jáni Khéls, for the “Khaissra” and “Khisor” passes: the former situated between the ranges of hills called Ishmail and Ucha which open in front of Mirian; the latter bounded on either side by mountains called Rucha and Mangi.

In the Khisor pass, which the Baki Khél share with the Jani Khél, there is said to be a wall of rock which prevents the water, which should be shared between these sections, from coming down to the lands of the Jani Khél, who are consequently said to be very anxious for its removal.

The Jáni Khél number 1,000 fighting men, and are divided into two sections, *viz.*, 1 Tor (black), 2 Sor (Red), which are again sub-divided into minor and unimportant sections, as Mohmit Khán Khél, Hindí Khél, Reshmea Khél, Bachakáe, Idia Khél. Some of the Jani Khél go in summer to the lower part of Shawal.

The Jani Khéls number 1,000; cultivate on all sides of the Fort Jani Khél and between the Khasor passes. They have four Sowars in the Frontier Militia and are responsible for the Khasor, Shaktú, and Karstú passes. They have on the whole always been a well-behaved tribe, always paying their revenue, and only been guilty of petty thefts. It is said that they are very anxious to draw themselves closer to the British, an end which the removal of the rock in the Khasor pass above mentioned would, it is believed, do much to compass.

The other sections which are mentioned by different authorities, *viz.* Dúrdáni Machi Khél (by James), Wangharwallee (by Lumsden), Sugdye Eusogye, Battye, Khosallye, Shah Meerye, Bobalze, Meer Alye, Toowal Khél and Moot Khél by Edwardes are, where existent, probably sub-sections which have not attained any importance. MacLean suggests that the ‘Wargharwullee’ section of Lumsden may be a misnomer for Woorghurral, a section of the Bitansis.

The strength of the Utmánzaes then is as follows:—

|                  |       |
|------------------|-------|
| Hasn Khél.....   | 1,100 |
| Wuzi Khél.....   | 800   |
| Bara Khél .....  | 2,000 |
| Manzar Khél..... | 800   |
| Mada „ .....     | 2,000 |
| Túrí „ .....     | 3,500 |
| Kábal „ .....    | 3,500 |
| Maliksháhi ..... | ?     |
| Bakí Khél .....  | ?     |
| Jáni „ .....     | ?     |

---

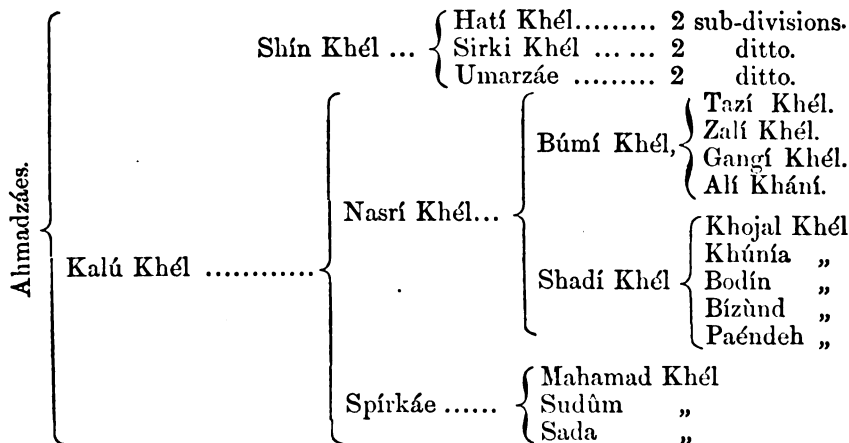
Total,... 17,200

The total then of the Utmanzáe Vazírís, is

|                        |        |
|------------------------|--------|
| Beyond the border..... | 14,700 |
| Within ditto .....     | 2,500  |

Total, ... 17,200 fighting men.

The Ahmadzáes are divided thus :—



The Hatí Khél is all within British territory; they number 1,500, and reside on the Vaziri Thal, N. of the Kúram.

Some of the Hatí Khél go in the summer to the Shakí plain. They also extend back to the Kafir Kot range, and have their "Kiris" scattered about in the various intervening "nullahs." Their principal settlement is Chapari which is shared by the Utmanzáes, who, with them, control the communication from the Kúram to Thal *via* Gúmatí or the Barghamatú. A few other tribes have settlements also between the Hatí Khéls and Utmanzaes. But the quiet of the That border and even the neighbouring parts of Marwat, depends on the good behaviour of those two clans.

The Hatí Khéls were deprived of most of their ancestral land in Shaki by the Khojal Khels and Spirkæ, consequently they can hardly go up as usual until they make up their difference which has placed the whole of the Shín Khél at variance with the Kalu Khel.

The Hatí Khél is a strong and important tribe and occupy rather a distant position from Banú. They cultivate lands on the Thal under the Barghamatú and Chashmeh springs and also in the neighbourhood of Súr. Their grazing lands extend from Barghamatú on the one side to near Zerkæe in the Khatak range on the opposite side of the valley. They are very much employed in the Salt trade and are not by any means an ill disposed tribe generally, but they have so many idle hands amongst them that it is not wonderful that some mischievous characters should be found among them. The actual murderers of Captain Meham

on 5th November 1859, were of this clan, but they belonged to a gang of robbers sheltered by the Kábal Khél Vazírís, and this section had nothing to say to the murder.

Of the Sirkí Khél, 200 are located within British territory and the rest are beyond in the hills S. of the Khisor pass.

Those beyond the border number 300 men, some of them living in the Waunch valley.

The Umarzáe number 600 and are all situated in British territory. That is to say, they all have lands in British territory. They also extend back between the border and the continuation of the Kafir Kót range where it cuts the Kúram. They have a village up there called Gúmatí. They extend to the East and join the Hatí Khéls at Chapari at the head of the Barghamatú, on these two therefore depends principally the freedom or otherwise of the Thal from raids. While they remain quiet and well disposed nothing can approach from the Kúram or from the N., without their knowledge. Their "Kiris" and flocks are in every ravine.

Their own ancestral lands lie in the Saktú near its head. Their lands are called Spírkae and Rasto Bazina.

They are surrounded by Mahsúd with whom they are on fair terms, but they often have cattle stolen by them. They are the best armed of the Ahmadzaes.

The conduct of the Umarzáe division of this clan has not been always so exemplary as that of others. Like other Vazírís they at first cultivated in the Banú Valley lands which had been wrested from the Banúchís of the neighbourhood. But owing to a misunderstanding about revenue matters, they began a series of aggressions; 1st, on the 3rd December 1849, they attacked the V. of Bazid Khán 3,000 strong, and killed several people, 2nd, soon after, they attacked 500 strong, the post of Gúmatí, but were repulsed by Mr. Macmahon; 3rd, again in February 1850 they attacked it; 4th, having induced the Mahsúd Vazírís to join them, they in November '50, made a formidable demonstration with several thousand men, intending to attack the town of Banu itself; but finding a strong force ready for them, they assaulted some border villages but were repulsed. In December '50 again they carried off a supply of supplies proceeding to a British camp. In 1851 they induced the Kábal Khel Vazírís to join them and appeared with 2,000 men, but retreated before the British outpost. Within the same year they attacked a police post and also a baggage party. Efforts were made to settle matters with them, but they continued, not only to threaten over attacks, but also to rob and murder by stealth. So after three years of open hostility on their part to the British, an expedition was undertaken against them with a force of 1,500 men. The affair was planned by Major Nicholson and was successfully executed. The Umarzáes were surprised in the fastnesses of their well-known hill of Kafir Kot, three of their principal villages and one encampment were destroyed. Thoroughly humbled they sued for peace and re-admission to their lands in the valley. An inter-

val was allowed to elapse in order that their patience might be tested. Their conduct being quite satisfactory, they were re-admitted during 1853, and are now as good cultivators as any section of the Vaziri tribe.

The Tází Khél number 1,750 and reside on the Khatak hills, Kohat district in winter; in summer they go up to the hills west of Gomal.

We do not appear to have had much to do with this section till quite lately. Taylor said they "do not give much bother, but some of them occasionally join with the Kábal Khél in a<sup>7</sup> raid. The section is generally trustworthy and respectable.

On the 5th March 1866, the Tazí Khél Vaziris were preparing to return to their summer quarters, when they were drawn into an ambushcade of their enemies, the Túrís, near the village of Thal. The Vazírís were overpowered and lost 13 killed and 6 wounded. After stripping the bodies of their arms and clothes, the Túrís retreated to their own country before the Vazírís could assemble. The Vazírís believed that the inhabitants of Thal who are Gar and friends of the Túrís brought the latter down on them. Accordingly, a body of Vazírís, principally of the Kábal Khél sections attacked the village of Thal and succeeded in carrying off 700 or 800 head of cattle.

Captain Cavagnari then demanded restitution of the stolen property; the Vazírís flatly refused. A force consisting of 2,600 levies and one wing of Cavalry, three wings of Infantry and two Batteries of Artillery, was moved out under Colonel Keyes, and reached Thal on the 22nd. The Vazírís then gave in; each of the above sections paid a fine of Rs. 200, and moreover agreed to make good the value of the property stolen or destroyed, viz., Rs. 6,486, giving hostages from the Mámi, Pipalzée, and Salphati sections, as a guarantee of payment: the troops then returned.

The Tazí Khél can be sufficiently punished by prohibiting their grazing in the winter, as they have nowhere else to go, being at feud with the Ghilzáes and Turís and the snow prevents their remaining in the hills.

The Zalí Khél live near the Gomal Pass, or lands, which have come down to them from their forefathers, and also in Gendni and Zangara.

The Gangí Khél number 550, and are scattered about the Zangarah ravine and Wallae ridge of the Káfar Kót range N. of the Kúram. Taylor says, they are always deeply engaged in the Salt trade, but are always ready to join in any mischief that is going on with the Kábal Khél and Hásn Khél (Utmánzáes.) Some live in the Wauneh valley.

The Alí Khaní are all beyond the British border.

They also come to settle for the winter in the Kohat district among the Khatak.

The Khojal Khél are all beyond the British border. Taylor says they are deeply engaged in the salt trade, but are apparently always,

ready to join in any mischief that is going forward with the Kabal Khél and Hásn Khél (Útmanzac) ; one of the Chiefs of this section has some land in Banú district.

They number 1,200 and reside on the banks of the Kúram from Thal towards Hangú. Some of them live on the Waunch valley, and in the winter many of them come into the Kóhát district among the Khataks.

The Khúní Khél number about 400 fighting men, and are all beyond British boundary, living at Tarap near the Kúram 16 to 20 miles from the Frontier. They also inhabit the lower part of the Shakia plain, some also live in the Waunch valley and on the Zangara Nala.

The Bodín Khél number only about 80 men and are all in British territory, their land being on the Thal mixed up with those of the Spírkáe. Some of them go in summer to the lower part of the Shaki plain.

The Bísúnd Khél number about 600 men. They are a very well behaved respectable tribe. They cultivate some land in a valley in the hills called Ping which lies to the N. of the Gúmati pass between that and Bargamtu. They have never been hostile to the British Government. Some also live in the Waunch valley. Their ancestral possessions are in Badr. The Moghal Khéls never come down into British territory like the rest of the Bízún Khéls.

The Páendeh Khél number 200 ; they have lands in British territory on the Dhamai Thal mixed up with those of the Spírkáe. Some of the Páendeh Khél live in the Waunch valley. The Bízún Khél, Páinde Khél and Bodín Khél are always ready to stand together.

All of the Spírkáe sections, *viz.*, Mahamad Khél, Sudam Khél and Sadi Khel (except a few of the last who are great robbers,) are in British territory. They number 1,100.

The Sudam Khel is the section of Swahn Khan so well-known from Major Edwardes' book on this Frontier. Some of this section go in the summer to the lower part of the Shaki plain. The Spírkáe have always been a well behaved section, until the defection of the Mahad Khel branch in 1870, of which the following is an account :—

In the beginning of 1870 or end of 1869, a bunneah was carried off by the Kuram pass, for which the Mahamad Khels were responsible. They were heavily fined for this. Shortly afterwards the Kuram went very low, and the Mahamad Khels were sent by the "Tehseeldar" of Buuu, Ata Ulla Khan, to repair a "bund" which diverted the little water that remained on to Banuchli land. They did this grumblingly because their own lands were dry,

They shortly afterwards burst the "bund" and seized the water for themselves. They were fined again for this. They then prepared for "badi."

They went off to the hills as usual, and stopping about a day's journey beyond the border, they returned and attacked a guard of Infantry on its way to the Kuram Post, killing six of them. Ever since then they have been giving trouble.

The total strength of the Ahmadzaes is as follows:—

|                     |       |
|---------------------|-------|
| Hati Khel, ... ..   | 1,500 |
| Sirki Khel ... ..   | 500   |
| Utmanzae, ... ..    | 600   |
| Tazi Khel, ... ..   | 1,300 |
| Gangi Khel, ... ..  | 500   |
| Ali Khani, ... ..   | 100   |
| Khojal Khel, ... .. | 1,200 |
| Khuni Khel, ... ..  | 400   |
| Bodin „ ... ..      | 80    |
| Bizund, „ ... ..    | 600   |
| Paendeh „ ... ..    | 200   |
| Mahamad „ ... ..    | 600   |
| Sudam „ ... ..      | 400   |
| Sadi „ ... ..       | 200   |

---

Total, ... .. 9,580

Or, Independent ... 4,850

Within the border, 4,430

All of the Vaziris mentioned above as residing in British territory have settled down into good cultivators and pay their revenue with praiseworthy regularity.

Within the last few years they have become very eager to possess themselves of as much land as possible, and are not unfrequently to be seen in the British Courts litigating for their rights with as much enthusiasm and not less noise than a Banuchi, for this Thal tho' sandy is very favorable for the Rubbee crops and in some parts produces also good Khareef. During the early days of British rule, Major Taylor, the Deputy Commissioner, induced this tribe to settle by giving them grants of land. They are described as behaving themselves very well, and have furnished a police post in the midst of their camps for the better establishment of order amongst them.

The following statement shows in detail the extent and value of the land occupied by these Vaziris in British territory, and the amount of revenue paid by them:—

|                                                          |        |              |        |     |          |
|----------------------------------------------------------|--------|--------------|--------|-----|----------|
| Sudam Khel including Paendeh and Bodin Khel 6,525 acres. |        |              |        |     |          |
|                                                          | 8,968  | Rs. reduced. | 1,685  | Rs. | Revenue. |
| Mahamad Khel...                                          | 1,205  | "            | 9,213  | "   | 709      |
| Hati Khel,.....                                          | 3,761  | "            | 14,855 | "   | 1,635    |
| Sirki Khel, .....                                        | 566    | "            | 787    | "   | 213      |
| Umrzae .....                                             | 1,861  | "            | 1,376  | "   | 735      |
| Khojal Khel .....                                        | 417    | "            | 1,716  | "   | 101      |
| <hr/>                                                    |        |              |        |     |          |
| Total Ahmadzaes                                          | 15,572 | "            | 55,335 | "   | 5,864    |
| <hr/>                                                    |        |              |        |     |          |
| Jani Khel and Malikshahis.....                           |        |              |        |     |          |
|                                                          | 1,937  | "            | 6,637  | "   | 500      |
| Takhti Khel ...                                          | 2,076  | "            | 5,278  | "   | 465      |
| Narmi Khel ...                                           | 750    | "            | 2,104  | "   | 326      |
| Sardi Khel ...                                           | 1,085  | "            | 2,774  | "   | 506      |
| <hr/>                                                    |        |              |        |     |          |
| Total Utmanzaes                                          | 5,848  | "            | 16,793 | "   | 1,806    |
| <hr/>                                                    |        |              |        |     |          |
| Grand Total                                              |        |              |        |     |          |
| Vaziris.....                                             | 21,420 | "            | 72,128 | "   | 7,670    |

Edwardes thus describes the emigration of the Ahmedzaes to the plains of Banu. "A multiplying people, increasing flocks, and insufficient grazing grounds, first brought these nomads into Banu about "thirty years ago.

"The Thal, too dreary and barren for the softer Banuchi, was to them a tempting space; they drove down their herds into it, and "pitched their black blanket tents; the flocks fattened, and the winter "which raged in their native hills passed luxuriously away in these new "plains. The spring sun rekindled the love of home, and made the "goatskin cloak hang heavy on the shoulders of the mountaineer, and "the sheep to bleat under its fleece. The tribe turned their faces to- "wards Speenjha; and the Bunnoochee thieves, hanging on the rear of "their march to the very borders of the valley, were afraid to venture "within the range of the 'juzails' of the Ahmudzaes, and the strangers "went away unchallenged.

"Again and again the winter brought them back, and in occasional "collision between the savage of the plain and the savage of the moun- "tain, the Vizeeree proved ever the savagest, and became a name of "fear and hatred in Bunnoo. At length the Vizeeree cast his eye on "the Bunnoochee fields and harvest, and became possessed with the "lust of land. So he proceeded in his rough way to occupy what he "wanted, which, for the convenience of being within reach of his own "people, he chose nearest to the Thull; and when the Bunnoochee own-



"er came to look after his corps, he was 'warned off' with a bullet as a trespasser. A sad era was this in Bunnoochee annals. Hushed were all private feuds now, for the lion had come among the wolves : Mullick after Mullick was being robbed.

"At length the two great 'goondees' laid aside their differences and met in high council on the dilemma. Then had been the time to fight, and fight desperately, ere the intruders had taken root ; and some voices did cry out for war, but the chiefs of the two 'goondees' knew their strength, and that the whole valley could not muster twenty thousand men. On one side, their neighbours were afraid to assist them, for their little valley was nearer than Bunnoo to the Vizeeree hills. The brave men of Murwut, on the other side, were scarcely less hostile than the Vizeerees. The Vizeerees themselves could summon forty thousand warriors. The 'council of war' as usual resolved on peace—"tempered," as Talleyrand said of the Russian despotism, by "assassination." They would not fight the Vizeeree tribe, but they would harass individuals with matchlock, knife, and ambuscade, and make occupation or cultivation impracticable.

"They little knew the Vizeeree temper. The first act of treacherous hostility drew down a fearful and bloody retaliation. Where at first only a field was gone, now a home was desolate : and so both sides continued ; the Vizeeree encroaching, the Bunnoochee resisting ; the Vizeeree revenging, the beaten Bunnoochee retiring in despair. At length even this found its limit. Both sides grew weary. Only a few Vizeerees cared for the new toy of cultivation and many came to compromise with the owners for small sums of money, inadequate, but better than nothing. The Vizeeree intruders built forts like those of the Bunnoochees on the plundered lands, and with the usual facility of revolutions in the East, soon passed into undisputed proprietors of some of the best tracts on the left bank of the Koorrum. But they never mixed with the Bunnoochees, either in marriage, religious ceremonies or the more ordinary affairs of life. Had the Bunnoochees been less wronged, the Vizeerees would have been still too proud to mingle blood pure as the snow on the Sufeyd Koh, with the mongrel lowland tribes of Bunnoo. Proud, patriotic, and united among themselves ; austere and simple in their own manners, but hospitable to the stranger, and true to their guest against force or corruption, the Ahmudzyes stood aloof from the people they oppressed, and looked on in contempt at their cowardly submission, their disunited efforts against the Sikh invader, their lying dealings with each other, their treacherous assassinations at the board, and the covetous squabbles with which they converted into a hell the heavenly valley given them by nature."

"I must not conclude this sketch of the Vizeeree settlement in Bunnoo without mentioning, that as the Ahmudzyes have occupied (besides their seizures in the tuppehs) the Thull on the east, and the waste under the hills on the north of Bunnoo, so their countrymen of the Otmanzye branch have felt their way down from the western mountains

“ to the waste lands which lie about the banks of the Tochee, scraped out  
 “ of them a little precarious cultivation, and built a few forts to protect  
 “ them from the Bunnoochee owners in the adjoining tuppehs of Meeree.”

The Mahsuds are divided thus :—

|                   |                       |   |                                                                                                |
|-------------------|-----------------------|---|------------------------------------------------------------------------------------------------|
| Alizae 6,400...   | Poti Khel<br>3,500    | { | Shabi Khel, ... .. 1,200<br>Monzae „ ... .. 1,300                                              |
|                   | Shaman Khel<br>2,900  | { | Juliar Khel, ... .. 600<br>Khati „ ... .. 500<br>Badinzae ... .. 800<br>Gulshahi, ... .. 1,000 |
| Bololzae 8,100... | Haimal Khel<br>4,200. | { | Abduli, ... .. 2,500<br>Malikshahi ... .. 800<br>Nagur Khel, ... .. 900                        |
|                   | Band Khel<br>300      | { | Aikam Khel.<br>Tutia „                                                                         |
|                   | Nana Khel<br>2,400.   | { | Haibat „<br>Umar „<br>Alikhani „<br>Mir „<br>Manda „<br>Burta or Buruti.<br>Mehr Khani.        |
|                   | Shingi<br>1,200.      | { | Mahamadi.<br>Joki.<br>Mallai.<br>Babali.                                                       |

Total,.....14,500.

All the Mahsuds are beyond the border: an attempt was made to get them to settle like the Darvesh Khel, but it has not been as yet successful.

The above numbers are taken from Mahamad Hyat Khan. The Nawab of Tonk makes the Alizae to number 7,600 and the Balolzae 6,000.

The Mahsuds command the Ghwalari Pass and have long been in the habit of attacking the Povindah caravans, but as they are generally sure to get as good as they give, there is a limit to these attacks. In the Sikh time their raids into the plains were frequent and once they burned the town of Tonk.

From annexation to the date of their expedition against them in 1860, their conduct is well described in General Chamberlain's despatch of the Mahsud campaign. “ Lastly, he says, come the Mahsuds, who of

"all three branches are pre-eminent for living by plunder and violence, "and trusting implicitly to the inaccessibility of their mountains, their "conduct from first to last has been outrageous. To go no further back "than the five years I have commanded on this frontier, the police reports "of the District Officer record against them the commission of 184 crimes "of a heinous nature." In addition to this list, in March 1855 a native officer and 12 troopers, pursuing too far into the hills, were surrounded and destroyed; and in November of the same year some 3,000 of the tribe assembled in the pass in front of Tonk with the intention of plundering that town, but were foiled in this object by troops arriving by a forced march of 50 miles. So far back as the spring of 1855, the Chief Commissioner, becoming impressed with the injuries committed by the Mahsuds, recommended that a force be sent against them in that autumn. In February 1857 Sir John Lawrence again found occasion to recommend that retributive measures be no longer delayed, and Government sanctioned their being undertaken; but again circumstances arose to prevent their being carried into execution.

Emboldened by years of immunity and believing that they could successfully oppose any attempt to penetrate their mountains, they, on the 13th March last, without provocation or pretext of any kind, came out into the plains to the number of some 4,000, headed by their principal men with the intention of sacking the town of Tonk. Fortunately the Cavalry outposts in the neighbourhood had sufficient warning to admit of 195\* sabres being collected to meet the inroad; and through the skill and boldness of the Native Officer who exercised command, and the gallantry of all ranks, this body of disciplined and well-armed men met and drove back the marauders

|                                     |     |
|-------------------------------------|-----|
| * 5th Regiment Punjab Cavalry ..... | 158 |
| Mounted Police.....                 | 37  |
| Total.....                          | 195 |

to the hills; making them leave upwards of 100 dead on the field, besides a large number of wounded, at a loss to ourselves of a few men but many horses. This outrage was considered as filling up the measure of their offences. His Excellency the Viceroy and Governor-General ordered that a force should enter their mountains, and there exact satisfaction for the past and security for the future.

"On receipt of the order for conducting military operations, steps were at once taken to assemble the necessary troops; and on the day month that the marauders emerged from their mountains to sack Tonk, a force pitched its camp upon the scene of their disgrace, preparatory to penetrating their stronghold in search of redress; but prior to moving, a proclamation was sent to the Mahsood Chiefs, to announce the object for which the Government forces entered their hills; to tell them, that within a fixed period, they were free to attend the camp for the purpose of learning the demands of the British Government; and that, on their failing to appear, or not complying with the demands, they and their tribe would be treated as enemies and punished; and that their blood would be upon their own heads."

The above extracts from Brigadier General Chamberlain's report explain "why the operations now detailed were undertaken, and show that, before entering their hills, every opportunity was afforded the tribe to come to terms, but in vain; they had taken their course and adhered to it. No reply was received to the Brigadier General's proclamation. Reports reached camp that the Waziris were assembling within a few miles of the plains. Further delay was to be avoided; and accordingly, on the morning of the 16th Brigadier General Chamberlain struck his camp and with a force of 5,166\* fighting men crossing the border by the Tank-zam entrance opposite Tonk."

|                    |       |
|--------------------|-------|
| * Staff.....       | 8     |
| Sappers and Miners | 478   |
| Artillery.....     | 237   |
| Cavalry .....      | 339   |
| Infantry .....     | 4,134 |
| Total... ..        | 5,196 |

"Meeting with no opposition, the force, on the 18th idem, reached a walled village called Shingee-ka-Kote, about 28 miles from Tonk. On the approach of our Cavalry a small party of Wuzerees who had been left there, quitted the village. One was killed, a few taken prisoners, and some head of cattle and 200 sheep were seized on the hill side.

"A body of the militia was located at the village of Jundola at the western mouth of the Tunis Tunga, to keep open communication with Tonk, and thus ensure the passage of supplies, &c.

Take possession of Chundala.

"Before moving upon Kaneegorm, it is determined to penetrate the Shahoor and Koondeeghur mountains; but to retain possession of Jundola and keep open communication with the rear, it became necessary to divide the force;—and, accordingly, a detachment of the strength marginally noted was left at Paloseen, 4 miles in advance of Jundola, under the command of Lieut-Col. Lumsden, C.B.

Force divided and a portion left under Col. Lumsden at Paloseen.

4 Field Guns  
100 Cavalry  
1,564 Infantry.

"On the 20th Brigadier General Chamberlain, with the greater portion of the Cavalry and Infantry and the mountain guns, supplied with provisions for 8 days, moved towards Shahoor. The gorge was unoccupied, save by a small party of the enemy, who retired as our Infantry ascended the heights, causing by their fire, however, a few casualties. The defile is described as narrow and difficult, and about 3 miles in length, the hills on either side closing in so as to render artillery of little use. On emerging at the western end of the gorge, Major R. Taylor, whilst reconnoitring the road ahead, came in broken ground upon three Wuzerees, who attacked his party and wounded three men and some horse before they were killed.

General Chamberlain moves towards Shahoor.

"On the 22nd the force reached Burrund, at the foot of the Khoondeeghur mountains, and on the 23rd Jungsee-Khan-ke-Kote, a distance of about 24 miles from Paloseen.

Further Progress.

“Jungee Khan, the principal Chief of the whole Mahsood tribe, with his son and nephew, had fallen the previous month in the attack upon Tank. His fort was now blown up, and village destroyed. The residence of a neighbouring chief who was known not to have participated in that outrage, was spared.

“Having now seen the greater part of the south western portion of the district, and burned the crops, the force proceeded to retrace its steps, in view to joining Lieut.-Colonel Lumsden's column, prior to an advance on the capital.

“As the Troops were falling in for this purpose on the morning of the 24th, a despatch was received from Lieut.-Colonel Lumsden, reporting the successful repulse of an attack made upon his camp at dawn the previous day by a body of 3,000 men.

“The absence of opposition to Brigadier General Chamberlain's advance was thus accounted for. It appears that the Wuzerees had assembled in two large bodies; one to defend the passes in the more immediate neighbourhood of their capital, the other to attack the numerically weaker camp at Paloseen.

“But the latter move was eminently unsuccessful. Although in the first rush the vastly superior strength of the Wuzerees enabled them to annihilate the pickets, the advance of the great mass was quickly checked by Lieut. Colonel Lumsden, at the head of an in-lying company of Guides, About 500 of the bravest of the band, however, dashed into camp, cutting down all within their reach.

“The attack was so sudden and unexpected that some slight confusion prevailed, but the Guides were quickly rallied by Lieutenants Bond and Lewis, who bore the Wuzerees back at the point of the rifle sword, killing many and clearing the camp.

“Whilst this was going on on the right, Major Rothney, in command of the Goorkhas, supported by the 4th Sikhs, advanced on the enemy's flank down on the mass of Wuzerees with admirable steadiness. When clear of the camp, the Guides joined this force, and Lieutenant Colonel Lumsden with the detachments of the three corps, pursued the enemy for fully three miles over the hills, inflicting severe punishment, until they broke and dispersed.

"Though our loss\* in this affair was considerable, that of the enemy  
"was much more severe. 132

| <i>Loss in repelling attack.</i> |     |  |                              |
|----------------------------------|-----|--|------------------------------|
| * Fighting men killed, .....     | 21  |  | "dead Wuzerees having been   |
| Ditto wounded, .....             | 109 |  | "counted in and about Camp,  |
| Camp Followers killed, .....     | 16  |  | "and on the line of retreat. |
| Ditto wounded, .....             | 23  |  |                              |

"Lieutenant-Colonel Lumsden reported in the highest terms on the  
"conduct of the Officers and troops engaged in  
Conduct of the Officers "this affair. Major Rothney, commanding the  
and men engaged in repell- "Huzara Goorkha Battalion, in particular, seems  
ing the attack. "to have distinguished himself for promptness of decision and correct-  
"ness of judgment.

"To revert to the main column, which had commenced on the 24th to  
"retrace its steps, it met with no opposition in its  
Return of the main Co- "return; but as the attack on Colonel Lumsden's  
lumn. "camp showed a determined hostility on the part of  
"the Wuzerees, it was deemed necessary to destroy such crops and  
"villages as had been spared on the occasion of the advance. The two  
"Columns were re-united on the 26th, and, the camp was pitched at  
"Mundani Cuchee, a mile and a half above Paloseen.

"From the 27th to the 1st of May the force remained halted, to admit  
"of the sick and wounded being sent back to  
Sick and wounded sent "Tank, and for the litters to rejoin preparatory  
back to Tank. "to an advance on the capital.

"The advance was further postponed by the arrival in the Camp of  
"a deputation of 11 Mahsood Chiefs, who were  
Arrival of a deputation "received by the Commissioner, Major Taylor,  
of the Mahsood Chiefs. "Brigadier General Chamberlain and Lieutenant-  
"Colonel Lumsden. Every exertion was used to persuade these Chiefs of  
"the advantages of peace, and to show them how anxious we were to  
"avoid further hostilities. They were informed that if the tribe was too  
"poor to make the necessary compensation for the cattle stolen during  
"the last eight years, the concession of a free passage for the force to,  
"Kancegoram, with security for the future good conduct of the tribe  
"would be accepted as indemnity for the past. The Chiefs were further  
"assured that if these terms were accepted, neither their houses nor crops  
"should be injured; and after one day's halt at Kancegoram the force  
"should return, either by the Bunnoo or Tânk route as most convenient.

"The meeting, however broke up without any definite understanding  
"having been arrived at; the Chiefs returned to  
Their return. "their clans, and preparations were made for the  
"advance of the force.

"It was evident that the Wuzerees were determaind to fight.  
The forced marches. "The force therefore march on the 2nd to Jhunggee-  
"ke-kote, and on the 3rd reached Zerunaim, at  
"the southern entrance to the Awnai. The destruction of houses and  
"crops was renewed.

"It now became apparent that the enemy had fixed on the Burrara

The Burrara Gorge.

"Gorge, about 5 miles from camp, as the most easy of defence, and that at this point they would oppose the further progress of the column. This gorge, is described by Brigadier General Chamberlain as the most difficult of any that was seen, whilst the Awnai gorge where resistance was first anticipated, proved to be the easiest, thus accounting for the non-appearance of the enemy at this latter point. From the Awnai gorge, the Brigadier General thus describes the onward route to the capital. From the Awnai upwards the passage is considerably narrower than it is below it, and the hills on either side are steeper and higher. In short from this point upwards, the whole road is a defile until close to Kaneegoram, when the hills become lower and rounder in form.

"Soon after daylight on the 4th, the force moved forward, and after

The advance of the force up the Defile.

"advancing 4 miles up the defile, entered a narrow cultivated dale, at the further end of which, and distant about a mile, was the Burrara-tunga. The heights on both sides were crowned by the enemy, estimated at from four to seven thousand.

"The Burrara-tunga is described as a narrow cleft cut by the Tânk-

The Burrara-tunga described.

"Zam, through a chain of mountains crossing its course at right angles. Both sides of this passage are perpendicular to a height of 40 or 50 feet from which the mountains slope upwards at a considerable incline :—the southern face of the western hill being inaccessible to Infantry, but having a tower at the point where its eastern slope descends perpendicularly into the gorge itself, every commanding point was crossed by a breastwork, and the gorge itself closed by a wall of boulders and trees, equal to resist siege Artillery.

#### *Columns of Attack.*

\* Right Columns advance, Wing of 3rd Punjab Infantry, 300 strong, under Lieut. Ruxton.

#### *Support.*

2nd Punjab Infantry, 500 strong, under Lieut.-Colonel Green, C. B., Hazara Mountain Train, 4 pieces under Captain Butt.

#### *Reserve.*

Wing 1st Punjab Infantry, under Captain Keyes.

† Left Column advance, Wing 6th Punjab Infantry, 300 strong, under Lieut. Fisher.

#### *Support.*

Wing Guide Infantry, 250 strong, under Lt.-Colonel Lumsden, C. B., Peshawar Mountain Train, 4 pieces, under Captain DeBudo.

#### *Reserve.*

Wing 6th Police Battalion, 300 men, under Lieutenant Orchard.

"The Columns of attack were

"formed; the right,\* under Lt.-Green, C. B., the left† under Lieut.-Colonel Lumsden, C. B., Four Field pieces and the wings of the 4th and 24th Punjab Infantry formed the support about 900 yards from the gorge, with a wing of Goorkhas and Cavalry a little in their rear as a reserve; the baggage being massed in rear, guarded by a detachment of the 14th Punjab Infantry and foot levies, with a wing of the 4th Sikh Infantry as rear guard.

"Lieutenant-Colonel Green's column met with considerable resis-

Lieut.-Colonel Green's column. " tance ; but after a difficult ascent, covered by  
" the fire of Captain Butt's mountain train guns,  
" and that of the field pieces below, the leading  
" men of the 3rd Punjab Infantry, headed by Lieutenant Ruxton, reach-  
" ed to within a short distance of the breastworks, but in too small  
" numbers and too broken to make the final rush. Here a check occur-  
" red, and the Wuzerees, rushing from their breastwork drove the 3rd  
" back upon the support, which also gave way and the Wuzerees conti-  
" nued their gallant attack upon the reserve and mountain guns. But  
" short was their triumph. Captains Keyes and Butt received them  
" like gallant soldiers, and drove them back, when breastwork after  
" breastwork was won ; the casualties were 30 killed, including Lieute-  
" nant Aytoun, Her Majesty's 94th Regiment, attached to the 2nd Pun-  
" jab Infantry, and 84 wounded ;—the enemy leaving 35 dead bodies on  
" the ground.

" In the meantime, the fire of our guns being directed on their right,  
" the enemy were evidently giving way. Lieut.-  
The ridges cleared of the enemy. " Colonel Lumsden was ordered to advance,  
" which he accomplished with excellent judg-  
" ment, and then ascending the eastern slope of the hill, cleared ridge  
" after ridge, with his mountain guns, at a loss of only two men.

" No further opposition was offered, and the camp was pitched on  
" the Bungeewalla Cucha, three miles beyond  
No further opposition offered by the enemy. " the defile. The crops in the neighbourhood  
" were given over to the cattle, and the houses  
" set fire to. In the evening a deputation was received from the Mah-  
" sood Chiefs and from the Chiefs of Makeen suing for peace.

" On the 5th the force advanced, and after a march of 15 miles halt-  
" ed near Kaneegorum. Relying on the friend-  
The force halts at Kaneegorum. " ly professions of the Chiefs, no injury was done  
" to crops and property.

" At Maidancee, about four miles from Kaneegorum, the force was  
" met by the Syuds and Oormoor elders of the  
Protection given to the Oormoor elders of Maidancee. " place to whom assurances of protection were  
" given. It should be observed that no Wuzee-  
" rees reside in the town, which is only occupied  
" by the few remaining members of the Oormoor tribe, the original  
" occupiers of the country until dispossessed by the Mahsoods.

" The force halted during the 6th, 7th, and 8th, and sent messengers  
" to ascertain the intention of the Mahsood  
Attempt to ascertain the intentions of the Mahsood Chiefs. " Chiefs. Most unsatisfactory answers were re-  
" ceived, and reports reached camp that they  
" were consulting where they could best oppose  
" the egress of the force.

" No further communication being made by the Chiefs, the troops



The troops move back.

" moved back on the 9th, to Doatoga, 5½ miles,  
 " setting fire to everything that had been spared  
 " and protected on its upward march :—one ex-  
 " ception being made in favor of the property of the son of the Ahmed-  
 " zye Chief, Swahn Khan, famous for having, as far back as 1824, shown  
 " civility to the enterprising traveller Moorcroft, and subsequently to the  
 " British Officers engaged in the settlement of Bunnoo in 1847.

" On the 10th the force marched 5¾ miles towards Makeen, meeting  
 " with no opposition, save that attempts were  
 Attempts of the enemy " made to harass the rear guard ; but, owing to the  
 to harass the rear guard. " skilful arrangements of Lieutenant Colonel  
 " Wilde, C. B., commanding, only two men and one horse were wounded.  
 " All Mahsood property passed was destroyed.

" On the 11th, the force halted at Makeen, the residence of the  
 " Chiefs of the tribe, now deserted. In view to  
 Makeen destroyed. " save the town, every effort was again made to  
 " induce the tribe to listen to reason, but with-  
 " out effect. Makeen was therefore destroyed.

" Operations were now closed, and the force turned towards Bun-  
 " noo, the course by which it was originally in-  
 Operations are closed. " tended to return. As the column moved away  
 " on the 12th, two high towers which guard  
 " the eastern entrance of the valley, and had been occupied by our pic-  
 " kets, were blown up.

" The direction of the march was now changed towards the north ;  
 " 8¼ miles took the force to Ruzmuk, from which  
 Direction of march chang- " descends the Khissora defile leading to Bunnoo.  
 ed towards the north. " Shortly after leaving Maheer the Mahsood  
 " boundary is passed, but before crossing it, their village of Toda-Cheena  
 " was given to the flames, and its crops destroyed.

" On passing the Mahsood boundary, the Ahmedzye lands were  
 " entered. Small parties of Mahsood horsemen  
 Entrance into the Ah- " still followed, and endeavoured to annoy the  
 medzye lands. " line of march from the hill sides, and this  
 " continued until the 15th, when the force reached Surehab, from which  
 " date no more was seen of them.

" On the 8th the Force marched to Speen Soonk, 10 miles clear of  
 " the defile, and within the British boundary,  
 Return of the Force to " and two more short marches took it into Bunnoo.  
 Bunnoo.

" Although the expedition did not result in the submission of the Mah-  
 " soods, success was great. A considerable loss was  
 Great success of the ex- " inflicted on the tribe. Whenever they met our  
 pedition. " troops, they were invariably defeated. Their  
 " chief town Kaneegorum was occupied, and spared only on payment of a  
 " fine ; whilst Makin, another principal town was destroyed ; and their  
 " hitherto unknown country surveyed and mapped."

The conduct of the Mahsoods has, it is belived, been very unsatisfactory ever since the expedition of 1860.

Amongst the Mahsoods some of the Shahabi Khel Alizaes and Shingi, Jalal Khel Balolzaes have caused the greatest annoyance by their plundering habits. The Malik Shahis and Kukaris are not much better. The Alizaes are generally well disposed to the British, but the ties of kin and country are too strong to permit them to take a decided position against those evilly disposed. It is worthy of note that the Nawab of Tank is connected by marriage with the Manzar, Alizaes. The Mahsoods bear no good will to the other two great tribes, Ahmadzaes and Utmanzaes, as they attribute much of the success of General Chamberlain's expedition of 1860 to the information given by the Ahmadzaes to our officers. Several skirmishes take place between them annually in which lives are often lost on either side.

In 1865 a council was held, by which an arrangement was come to, else it is said, the Ahmadzaes and Utmanzaes would have united their force 20,000 in number and attacked the Mahsoods in their own country.

The Gurbaz number 1,500, and reside on the borders of Khost, to the Afghan Governor of which they pay a small tribute. The British Government has never come into contact with them. A small number live in the Tochi pass and form escorts for Kafilas to Dawar and Khost.

The Leila number 1,500 and reside on the (northern) slopes of the Sufed Koh. The British Government has never come into contact with them.

The grand total of the fighting strength of the Vaziris is :—

|                |        |
|----------------|--------|
| Utmanzaes..... | 17,200 |
| Ahmadzaes..... | 9,280  |
| Mahsuds.....   | 14,500 |
| Gurbaz.....    | 1,500  |
| Leila.....     | 1,500  |
| Total.....     | 43,980 |

The unity of the Vaziris is proverbial, yet in the three "razias" we have made into their country, we have found that they will not support each other; in each case the section which had come under our displeasure was left to fight it out by themselves.

Nevertheless that they have a character for union is undoubted, and James, writing curiously enough after both the Umarzae and Kabal Khel expeditions, still alludes to his belief in it.

This marked characteristic of the tribe, he says, is fostered by peculiar customs and law. It is well known that, amongst Pathans the avenger of blood is not only privileged but bound to slay any relative of the man who had committed the deed, for which vengeance is sought. But Vaziri greyheads of ancient times ruled otherwise, with them the actual murderer

must be the only victim. The effect of this wise law is to cement the tribe by avoiding those ramified feuds which in other places arise out of indiscriminate vengeance, where an account current of blood is handed down father to son to be balanced at convenience, and where the friend of yesterday becomes the victim of to-day. Again the sums of money which under certain circumstances are accepted by relatives of the slain, locally denominated "make up" money, are fixed at much higher rates than amongst other tribes. Vaziri life therefore is habitually regarded as something valuable. The sums are so large indeed as to be seldom forthcoming, when articles of property are reckoned on at fancy prices, but still the nominal mulct has restraining influence on those passions which would lead to strife and disruption.

Maclean says, that there is no pretence of union between the Darvesh Khel and the Mahsuds, the former call themselves Vaziris, and the latter Mahsuds; regarding them as wild beasts; but there is so far union among these, that though Darvesh Khel or Mahsud may not take up the quarrels of their brethren, they generally will not give information against them.

The Vaziris boast that they have no poor man amongst them. Whenever a family is brought low by deaths, accidents or raids, from without, the clan subscribes to re-establish it, one bringing a bullock, another a camel, a blanket and so on. Thus there is no incentive to the Vaziris to leave his home to seek a subsistence, or to enter foreign service, and therefore very few if any are to be found in the ranks of our Army.

The Northern Vaziris have very few regular villages, and these are on the banks of the rivers, protected by walls of loose stones and towers; within the hills they reside in "Kizdhees" or encampments, constructed of stout black woollen blankets spread over curved sticks with sides of coarse matting. These blankets are worth from 10 to 30 rupees, and are exceedingly impervious to rain, and not easily destroyed by fire. The cattle and sheep are kept in the encampment which is guarded by dogs of a large breed and singular ferocity. The only permanent traces of the Vaziris are found in the graveyard of their tribes, which are scattered over the hills at convenient spots. The tombs are of loose stones, put together with much care and neatness. These resting places of their dead appear to be the exclusive objects of veneration to the Vaziris, and in them are deposited their household stuff, when absent from their camps, the boldest thief not daring to lay sacrilegious hands on it.

The Vaziris are much under the influence of their spiritual adviser, Kazi Nazibula of Biland Khel and also of the Syads of Urmur. The Vaziris, physically, are tall muscular highlanders, and they are universally credited with considerable courage. Their successful forays have given them a great stock of camel, sheep and cows, which enable them to add meat and bread to their food. The Vaziris are at war with all their neighbours, and on every side except towards the British frontier they have made conquests. From the Karotis they have taken Bermul. The Jadrans are confined to one ridge, and the whole country of Zhob and Ghwalari Pass tremble at their very name. They are de-

clared by their enemies the Lohanis to be Shiahs, but this is a calumny. It is also said that they are descended from some few Hazaras, who fled before Nadir Shah and to have increased in these mountains, but this is not true as they speak "Pukhtu."

The Vaziris generally go on foot and are most active in the mountains. A few great men of the tribe have horses but are bad riders. They generally attack caravans by night but sometimes by day. A Vaziri is never spared when caught by any one of the surrounding tribes, their enemies. The Vaziris never injure females or take their jewels, but all males they invariably kill. Even by their enemies the Vaziris are allowed to be very hospitable: a man who has killed the brother of another need only go to his house to be treated as an honored guest, and a little girl would serve for escort thro' the whole country. They stick closely to each other, and their neighbours constantly allow that they are famous for speaking truth and for their courage, but with all this they are habitual robbers and murderers.

These statements however must be taken "cum grano," or in a comparative sense. They show the opinion which is held of them comparatively by their neighbours, for, as Lumsden says, of the Afghans, Vaziri honor and Vaziri hospitality when judged by a civilized standard, would surely seem infinitesimal in quantity and indifferent in quality.

Taylor has a high opinion of the Vaziris, and agrees in the main features of Elphinstone's eulogium. They are united amongst themselves and truthful, though haughty and blood-thirsty to strangers. Take them all in all they are a fine race of men, prone to plunder and careless about blood-shedding it may be, but bold, plain-spoken, true to their friends and not usually treacherous in their mode of prosecuting hostility to their enemies. When a Vaziri lets blood there is generally either some semi-political object or private revenge at the bottom of it, and they do not usually murder strangers. There is no denying they are inclined to be boastful and rough in council.

In religion the Vaziris are Suni Mahomedans, and all belong to the Samil faction of politics. Among their peculiar customs, in which they differ from other Afghans, is in case of adultery when instead of killing both parties they kill the woman but only cut the nose off the man.

The Vaziris neither own now, nor by their own account have owned, any allegiance to any of the Kings of Kabul. If you ask them where their country is, they point to the far off horizon where the azure sky is pierced by the snowy peaks of the Sufed Koh, which they call Spingurh. But that great range is only their citadel at the head of a long line of fastnesses, extending from their frontier of Tank, less than 100 miles Dera Ishmail, and to within 50 miles of Jelalabad.

The proper settlements of the Vaziris are amongst the higher spurs of the Suliman range where they pass the summer months. In October the greater portion of the tribe descends, with flocks and herds to the

lower hills bordering on the Kohat and Banu districts. Some of the clans who are located on the lower slopes of the Suliman mountain remain there throughout the year or only partially remove.

The Vaziri country is said to have wood and water and grass in plenty ; some valleys are partially cultivated with rice, joar, wheat and barley. The rice crop proves there is plenty of water.

The Mahsud country is intersected in all directions by ravines, generally flanked throughout their course by high hills, which occasionally recede sufficiently to give the space enclosed the appearance of small valleys. The width of these ravines is very variable, in some places being as much 1,000 yards, whilst at other, they narrow to 100 yards or less ; but as may be supposed they are broadest at their mouths and gradually narrow as they ascend. The narrowest parts are where the water has had to pierce its way through a range crossing its course at right angles. Such gorges, called by the natives "tungas," are the points usually occupied by them to oppose an enemy. On both sides at intervals throughout their course patches of land have been deposited and are preserved by artificial means for the purpose of cultivation ; and the largest of these afford some space for the encampment of troops. The beds of the ravines are paved throughout with boulders and stones.

In fine weather a stream of water usually trickles down them, requiring to be crossed every few hundred yards, but after rain these beds suddenly fill and often become dangerous torrents. Such channels and their tributaries form the ordinary means of communication within this country.

From the rugged nature of the country (says Chamberlain of the Mahsud), cultivation is confined to the plateaux at the base of the high mountains, the small valleys and to the plots of land bordering the main ravines ; these latter are termed by the natives "Kachis" and they are a feature in all the principal defiles of the Suliman range. In the valleys and "Cuchee" the land is generally terraced and irrigated, and in many instances the water is led into the fields by means of channels cut out of the hill side, exhibiting considerable engineering skill and great labour. The borders of the fields are commonly planted with mulberry and willow, which give to these spots a pleasing appearance compared to the rugged hills which encircle them. The Mahsuds live in houses and these are ordinarily perched upon the hill side above their cultivation, not together in any order, but apparently for convenience of families.

On both banks of the Kuram are broad tracts of rich soil, cultivated by the northern Vaziris, and also on the banks of the Ketī River, which rising in the Khost falls into the Kuram near Zerwahn. The produce of the lands is the great source of wealth to them. Beyond these streams they have no cultivation, but the hills afford abundance of rich pasture for their flocks, and the ravines are mostly lined with excellent grazing for their numerous camels. The general character of the hills on the right bank of the Kureem is not so difficult as their jagged

outline would indicate. They are but rough walls, which support extensive tracts of table land or conceal the grassy slopes within. There are few places impracticable for horsemen. The great apparent want is water; springs are rarely met with and these are not copious; at some of their encampments it has to be brought from a distance of several miles.

The Viziri hills to the east of the Kuram are much more difficult than those on the west; they are massed together, huge cliffs meet the eye in every direction and the inaccessible peaks of the higher mountains assume the appearance of gigantic castles.

The outer spurs of the Vaziri hills are quite bare of verdure and almost of soil, but as they recede from the plains, they become covered with olive, oak and lastly pine. In some parts at Maidni and Razmak the hills lose their steep character, and assume the appearance of downs covered with turf and wild flowers. None of the trees met with in Vaziristan are of any size and in strictness can only be called sub-arboreous, and this to the highest point (8,000 feet) reached by General Chamberlain. Above 9,000 feet, pines begin.

This fact of the absence of large trees depends in part on the aridity of this tract of country, and in part to the great scarcity of soil on most of it.

Iron ore is found in the Vaziri hills and yields a metal which is highly prized by the natives. The principal site is in the hill called Koh-i-Mahsud near Makin and Bobar, where the metal is found in a slightly lustrous ore, it is dug out and crushed. Perhaps Rs. 10,000 worth is sold annually and exported to British territories.

The inhabitants of Shekh Edli make vessels and plates of the iron which are exported to Ghazni by the Permulis. Every village and hamlet has its smelting furnace constructed with a conical roof of long poles planted nearly vertically in the ground. The ore is poor and scanty and the iron extracted from it is said to derive its value chiefly from being smelted with charcoal.

The Vaziris have a very fine breed of horses which are exceedingly hard and active, though small and often impetuous and vicious animals. They are difficult to procure in any great numbers, as the demand for them is great and they are numerically scarce. It is said that they have Arab blood in them derived from horses in Nadar Shah's Army, which were either given by or stolen from that conqueror. They appear to consist of two breeds: one called Khazarwal, from one Khazar who introduced them, the other Duglagala or thieves brood, from the parent having been stolen. However serviceable for ordinary purposes the Vaziri horse is not adapted for Cavalry, seldom exceeding 14 hands.

There are only two towns in the Mahsud country, Kanigorum and Makin. No Vaziris reside in the first, but all the tribe meetings are held there, and whilst the council is assembled, the inhabitants have to provide the members with board and lodging free of expense. Each clan having its established billet. With the exceptions of a few artisans residing at

Kanigoram no others are to be found in the Mahsud country. Their workmanship is strong but coarse, and the most valued arms are imported from Afghanistan or India.

Such trade as there is in the country is carried on by the Urmur tribe who owned the country till dispossessed by the Mahsuds.

*N. B.*—The accents are not entered in the last part of this paper, because sufficient were not available.

*This account of the Vaziris is compiled from the following sources : Edwardes, A Year &c. James' Letter on Kabul Khel Expedition ; Chamberlain's ditto ; Chamberlain's Mahsood Vaziri Despatch : Lumsden's Kandahar Mission ; Notes on Vaziris by Colonel Coxe ; Punjab Reports from 1849 ; Walker's Trans Indus Frontier ; Stewart's Notes on Vuziristan ; Reynell Taylor's Memo on Dera Ismail Khan ; Urmston's Notes on Bunnoo ; Thorburn's Report of Bunnoo ; Notes by Coke, Honigberger, Broadfoot, Elphinstone, Aga Abbas, &c. &c., and Captain MacLean on the Vaziris.*

C. M. MACGREGOR, *Lt.-Colonel.*

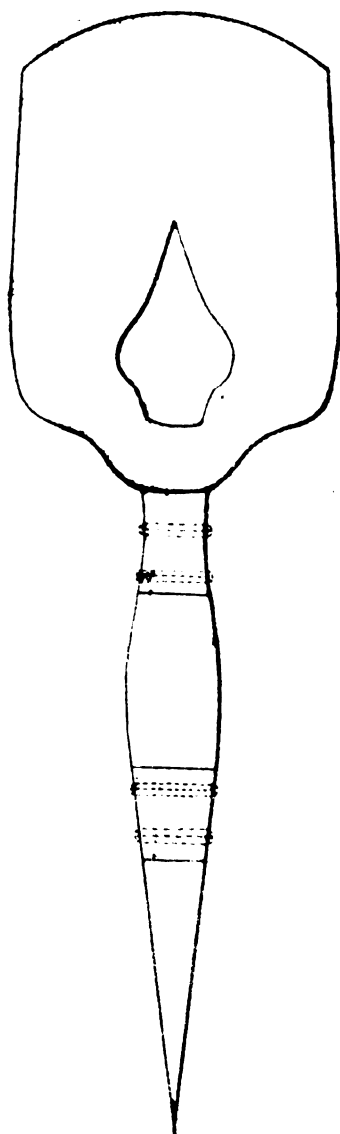








**SOLDIER'S SCOOP AND RIFLE REST.**



## II.

**Correspondence regarding a "Soldier's Scoop and Rifle Rest," invented by Captain H. L. A. Tottenham, Officiating] 2nd in Command 3rd Bengal Infantry.**

---

*(Published with the permission of His Excellency the Commander-in Chief.)*

---

*Memorandum on the necessity of providing the Soldier with the means of protecting himself from the fire of modern small arms as far as possible by the formation of cover when employed in exposed situations.*

1. The fire of the modern breech loading rifle has been brought to such a pitch of accuracy, rapidity and long range, that it has now more than ever become necessary to teach the soldier not only to take utmost advantage of all existing cover furnished to him by the natural features of the ground he may have to pass over both in advance and retreat, but to teach him individually to act in concert with others in the intelligent construction of such cover where none already exists. In short of such importance has this subject become, that it is time that those who may in future have to lead soldiers in their struggle on the field of battle should devote their earnest and patient consideration to the reduction of this question to regular system of methodical procedure.

2. The necessity of reducing the weight which a soldier is compelled to carry on service to the lowest possible scale, compatible with thorough efficiency, however, is an element that must always place a limit to the possibility of providing him with the means of individually intrenching himself as it were, though a great deal in my opinion may be done within those limits.

3. To provide each man with an ordinary pickaxe or spade would add an unfair and awkward load to that which the soldier already carries; to send him into the field totally unfurnished with the means of obtaining shelter of some sort in even the most exposed situations, would be in these days, to invite bloodshed enormously out of proportion to any possible object for war, except in the case of national freedom from a conqueror's yoke.

4. As a solution of the question, I beg to suggest the adoption in the British Army of an implement which I have invented for the purpose. It consists of a spade and pick attached to the ends of a short wooden handle, and furnished with a metal rod and lunette turning round hinge fashion towards either spade or pick end. The spade portion is carved longitudinally in the shape of a trowel for gardening purposes, and has a key let into the upper part over which the lunette rod fits, and then on the key being turned, is fixed up as a rifle rest, the spike or pick being stuck in the hollow made in the ground by a few cuts of the spade, so as to obtain a proper level for the rifle. At the upper end of the pick is a catch, by means of which the lunette rod may be fixed to that end of the implement when the spade is being used for digging. The length of the

blade of the spade, beyond the hollow cylinder to which the wooden handle is attached, is  $5\frac{1}{4}$  inches, the width at cutting edge is  $3\frac{1}{2}$  inches and at upper part  $4\frac{1}{2}$  inches, curve  $\frac{1}{2}$  an inch at centre of cutting edge. The spike or pick is a piece of metal, shaped like a spear head and including the cylindrical portion which fits over and is rivetted to the wooden handle or grasp, is  $7\frac{1}{2}$  inches long. The entire length of the implement is  $17\frac{1}{2}$  inches, and weighs about 2 lbs. and may be made in England very much lighter. When carried by the soldier it is slipped spike end down into a frog between the bayonet scabbard and large ammunition pouch.

5. The spade is of course for use in digging ordinarily hard soils, whereas the spike is, besides its use for setting up a rest for the rifle, intended for digging in hard, dry and gravelly soils, brick walls, &c.

6. The uses of this little Soldier's Scoop, Pick and Rifle Rest are so numerous as to be almost unlimited; but the following I shall enumerate as the most important from a military point of view.

1st.—Shelter and increased effective fire for the soldier while skirmishing in the most exposed situations.

2nd.—The possibility of cutting steps in steep slopes of earthworks and hill sides, to enable the soldier to climb, where at present he would need a ladder.

3rd.—The effective drainage of the space occupied by a tent during heavy rains.

4th.—The possibility of placing supports, when out with skirmishers, or during siege operations, in comparative safety by sheltering the men in a very short space of time, and as each man digs his own shelter trench, thus obviating the necessity of withdrawing a single intrenching tool or man from the advanced trenches.

5th.—Impromptu loopholing of walls at Picket posts, or posts seized by a sudden rush.

6th.—The formation of rifle pits and 'impromptu' trenches.

7th.—Digging of fireplaces for cooking, and 'Hunter's ovens,' during a campaign.

8th.—Construction of shelter from cold winds when bivouacking in the open level country.

9th.—Sanitary arrangements of a camp, each soldier becoming his own sanitary conservancy establishment.

10th.—Possibility of turning parts of the line of battle into ambuscades or temporary entrenchments in a few minutes.

11th.—In the absence of other entrenching tools, sloping off the steep banks of streams or ditches for the passage of Artillery.

12th.—The formation of a temporary cover sufficient to protect a battery or a corps of Cavalry from the small arm projectiles of the enemy, by means of bags of earth piled up as a wall.

13th.—Formation, by means of bags of earth, of a platform and cover for the Commanding General and his Staff as may be required.

14th.—Formation of cover for temporary Magazines for spare ammunition and waggons in rear of the lines of battle.

15th.—Shelter for a second deployed line, as well as for massed columns in reserve.

7. Besides the above I have no doubt there are very numerous other purposes, both in time of Peace and War, which will readily suggest themselves to the intelligent officer or soldier, as occasion arises, and the capability of the implement become better known in the ranks of the British Army.

8. Even as a ready weapon of offence in the midst of the crowded *melee*, when the musket and bayonet become unweildable or disabled, it would be no mean instrument of death and destruction in the hand of an active man.

9. With a cavity in the heelplate and stock of a musket just large enough to enable the spike to be fitted in and screwed up, a very fairly serviceable spade for use in the ordinary way might be obtained.

10. Each soldier might also be furnished with at least three bags or some light strong tough material, to be used where either extreme hardness or want of depth of soil, or of time, prevents the ordinary shelter trench from being dug out.

11. Such bags might also form an important part of the equipment of a battery and its waggons, as well as of the gunners and of Cavalry soldiers, and a waggon load might well be sent with every regiment of Infantry.

12. In order however to enable soldiers to dig their trenches without being fatigued or having their shooting powers destroyed by the exertion, it will be absolutely necessary to put every man through a systematic course of instruction and practice.

13. I do not for a moment desire to claim for my invention perfect freedom from fatigue in its use for the first time ; but I mean to say, that by following a regular system of procedure in the operation of digging, a man can be brought to that condition that he may preserve his wind and nerve so well as to shoot quite as well after the exertion as before it.

14. The following is my method of proceeding after many trials.

I lie down on the ground and mark by a few cuts in the ground the outline of the trench ; if there is strong tangled turf, I cut away the

grass within the space marked off, and then proceed by steady, not hurried cuts, to dig out the first layer of earth, which being cleared out with my hands, after a convenient amount of earth has been dug, I repeat the operation until a depth is attained which will allow of my whole body when lying down in the trench being below the surface of the ground. I have generally found that two layers provide the necessary depth for such shelter except in unusually hard dry ground. I then dig a narrow hole with a few cuts of the scoop, of sufficient depth to allow the rest being sunk to a convenient level for easy and certain aim. This hole should be about the length of the fore-arm from the head of the trench towards the enemy. A bag filled with earth well rammed in, placed at the head of the trench and another beyond the scoop placed as a rest, renders me almost inaccessible to an enemy's bullet.

15. I have no doubt whatever that a soldier trained to a methodical use of this implement, could without over fatigue thus shelter himself and increase the efficiency of his fire within 3 to 5 minutes.

*Memorandum on the improvement of the "Soldier's Scoop and Rifle Rest."*

The Lunette Rod originally forming a part of the 'Soldier's Scoop' being liable, in the hands of an awkward man, to get bent or broken, I propose to obviate this by superseding it by means of an orifice in the spade portion of a sufficient size to allow of the passing through and being thus held in a rest.

The form of the orifice is that shown in the rough sketch in the plate.

The form adopted will enable a soldier to preserve his direction of fire on the darkest night on a working party repairing a breach in an enemy's fortress, by making during day-light a slight nick at the head of his trough or rifle pit for the butt of his rifle to rest in.

The amount of iron cut of the scoop and the removal of the lunette rod, will thus further reduce the weight of the implement, and render it so simple as to obviate the possibility of breakage in the hands of the most awkward soldier. The size of the orifice, I am of opinion, will be ample to prevent the knocking off the fore-sight, which at first sight appears to be the disadvantage of the improvement. It can now be used with both hands and without the orifice interfering with the use of the scoop practically.

*Directions for the use of the "Soldiers Scoop and Rifle Rest."*

Any one who has noticed two men at work at hand pumps will have also noticed the vast difference in the quantities of water pumped up, when one is accustomed to the operation and the other a new hand at it.

2. The former will be found to work the handle at a comparatively slow pace, the latter, in his anxiety to work quickly, with the idea that the quicker he works the handle up and down the more water he

will bring up, soon exhausts himself and in the end fails to obtain nearly the amount that the former does in the same space of time. While the former is able to carry on the work and presents but little appearance or symptoms of fatigue, the latter is thoroughly exhausted and unfit to proceed with the operation.

3. The reason of the vast difference in the results of the two men's labour is very simply explained. The experienced man gives himself time to press the handle down and pull it up to its full extent, thus at less expenditure of breath and strength takes full advantage of all the power he possesses. The inexperienced hand, perhaps the stronger and more muscular man of the two, expends by far the greater portion of his breath and strength in overcoming the jars and jerks of the pump, and by perhaps working the piston through only half the space it is worked by the former, draws out but half the quantity of water at each downward motion of the handle.

4. The principles to be held in view in working the soldier's scoop are thus clearly indicated. Too rapid strokes of the spade or pick are not conducive to ultimate rapidity in digging a sufficient shelter to lie down in, and will exhaust and unnerve the soldier so much as to prove destructive to his accuracy of shooting, notwithstanding the firm rest afforded for his rifle by the lunette rod.

5. The soldier should proceed, as follows, in as deliberate a manner as possible and in the full confidence that systematic procedure will enable him, with a little practice in handling this implement, to construct for himself, with comparatively little expenditure of breath and strength, a shelter, that will give him, besides a very great immunity from the possibility of being hit, great confidence in returning the enemy's fire.

6. *1st.*—Preparatory to commencing to dig his shelter trough, he should mark off the space necessary to lie in with comfort.

*2nd.* He should cut away by the roots any grass there may be.

*3rd.* He should commence to dig with a deliberate steady stroke, from the end where his feet will lie, upwards to where his head will be. At every dozen strokes or so he should clear the earth away by hand.

*4th.* Having finished the first layer throughout the extent of ground marked, he should repeat the operation until the trench obtained is deep enough to hide his whole body. This will be usually done at the second digging.

*5th.*—The trench being finished, five or six cuts of his scoop, about the length of his fore-arm from the head of the trough, will enable him to produce a hole within which to stick his scoop up as

a rifle rest, the lunette rod being turned up and keyed at the spade end of the implement previously.

6th.—He should now lie down in the trench, make himself as comfortable in it as possible, test the height of the rest, and then, leaving the rifle either on it or drawing it into the trough by his side, await the arrival of the enemy within effective range.

7. In order to fire comfortably from the rest, he should take care to make the trough wide enough near the head and shoulders to enable him to plant his elbows firmly on the ground while taking aim, and to move his arms freely in getting out his cartridges, as upon this latter will greatly depend both his comfort and security, as well as the rapidity of his effective fire.

8. In very hard ground, or where want of sufficient depth of soil or want of time prevent the shelter trench from being dug as deep as usual, the soldier should still proceed as far as he can in the manner above laid down, and then fill one or more of the bags with which he is provided, shaking the earth well into it and making it as hard as possible before tying up the mouth of the bag. He should then place the bag or bags at the head of the trench, set up the rest as before described, and then pile up the solid bits of turf he may have dug up against and beyond the bags and rest.

9. The soldier should always hide the rest from the view of the enemy as much as practicable, without interfering with his own aim or creating two conspicuous a mark for the aim of an enemy.

10. In placing a bag it will always be safer to sink it slightly in the ground by making a slight cross trough about three inches deep, and with the side nearest to himself cut perpendicularly to enable the bag to present the greatest possible solidity to a shot striking it; a bag placed thus and another placed beyond the rest, should generally be sufficient to defend the soldier from being hit.

11. The above is an outline of the method which an individual soldier should adopt in providing himself with shelter.

12. There are a few other uses of the Soldier's Scoop which require a short explanation.

13. When required to dig rifle pits during a siege, or in a prepared position in which it is proposed to await the enemy, soldiers should be told off in files, and working alternately, should dig a space of about seven feet long,  $3\frac{1}{2}$  feet wide and sufficiently deep to enable a man to sit comfortably on the watch for a shot at the enemy, while his comrade rests himself by lying down if requisite at full length. In this case it is advisable to throw the earth out so as to give as small a mark to the enemy's Artillery as possible, and affording as much obstruction to the enemy's small arm projectiles as can be obtained with due regard to that proviso.



14. The formation of a trench, for a body of men ready to rise in close formation at a given signal, should be governed by the same proviso as in the last case, otherwise losses will arise from enemy's shells. The dimensions of all work of this nature should be carefully marked out previous to the operation of digging.

15. In marking out such impromptu trenches for the purpose of ambuscade, concentrated cross fire should to a certain extent be aimed at without, at the same time, exposing the trenches to enfilade.

16. In the construction of the breast work for the protection of a battery of Artillery, corps of cavalry, field magazine or depot of cartridges, or of the column of reserve in open ground, the bags provided should be filled by a sufficient number of men told off in three divisions; one to dig, a second to fill the bags with earth, and the third to carry and pile up the bags. In this way protection may be obtained to a very appreciable extent against the enemy's bullets, and even, if time admits of it, against his Artillery.

17. Magazines of Artillery, Ammunition and Depot of small arm cartridges, placed behind the second line, should first be sunk under the surface of the ground as much as possible, and then the earth dug up be utilised in bags piled over them, leaving a small orifice behind to enable the contents to be distributed when required; these orifices, even being closed temporarily, by means of a few bags on end, in order to prevent accidents from the bursting of shells.

18. In the formation of loop holes in walls, of materials other than stone, the position and size of such should be marked by an officer previous to the men working at them. If water is at hand in abundance, each man should wet the space marked on the wall, after each layer of material is worked out, so as to prevent his eyes being injured. In working out the loopholes, the soldier should commence by a deep incision across the full breadth at the lowest point, and work gradually upwards taking out the material in layers at a time over the full extent of the space marked off.

19. To construct the camp 'Hunter's Oven' for baking meat, a hole is made in the ground, gradually widened at the bottom. A fire is lighted in it, and allowed to burn out its flame, the ashes and cinders are then taken out, the meat wrapped in the cleaned skin of the animal, or in the absence thereof, in a lot of leaves pinned together or sewn, is placed in the hole covered with a few loose leaves, over which the hot ashes and cinders are thrown and the mouth of the oven then closed with a piece of turf cut a size larger than the orifice.

20. The meat will be baked in a period of time varying of course with the size of the oven and the size of the piece.

21. Camp conservancy explains itself; each man digs a hole of 8 or 12 inches depth, and covers it in with the earth when he has performed

the offices of nature for which intended, stamps the earth down with his feet before leaving the spot.

22. Drainage of a camp is effected by making a drain round the tents, and connecting these with the main drains laid out by the Engineer Officers. Tent drains need only be a few inches deep the earth being piled up towards the tent.

23. Cutting of steps up steep slopes of course needs no further explanation than to say that only a few men are required to do it, while others keep up a brisk fire at the defenders of the work or position.

24. In this Memorandum, I have endeavoured as far as possible to reduce the working of the Soldier's Scoop to a regular system, and I trust, I may thereby have succeeded in instilling some portion of my own confidence in its practical usefulness into the minds of my fellow countrymen and soldier comrades.

*Addenda to Memorandum on the use of the "Soldier's Scoop and Rifle Rest."*

With reference to para. 16 of the above Memorandum, the Infantry employed in the operation indicated should be so disposed on the flanks of the Artillery or other object, so protected as to form trenches sufficiently deep to afford cover to themselves when the duty is completed such as will enable them to deliver a concentrated cross, as well as direct fire, on any body of the enemy advancing to attack the battery. These trenches must also be so placed, as to interfere as little as possible with the future possible movements of the battery to draw as little shell fire on it and afford it as efficient support against the enemy's opposing Artillery and marksmen, as can be obtained under the circumstances.

Not less than three companies of Infantry should be told off for this purpose, and it would be convenient to attach them as an escort to the battery to cover its movements as skirmishers throughout the action.

The nature and position of the trenches should be indicated by the Commandant of the Battery, who should also construct as much sunk cover for his guns as he can, beyond which the Infantry should construct the temporary and moveable cover of bags of earth.

HENRY L. A. TOTTENHAM, *Captain,*

*Offg. 2nd in Command,*

*38th Bengal Infantry.*

FYZABAD, 8th October 1870.

*The 'Scoop' being referred for trial to the Commandant Sappers and Miners, that Officer pronounced the opinion on its merits contained in the following letter :—*

**SUPERINTENDENT INSTRUCTION OFFICE,**

**BENGAL SAPPERS AND MINERS,**

**No. 139.**

*Roorkee, 5th July, 1871.*

**SIR,**

In accordance with your letter, Equipment No. 174-2, of the 7th January 1871, forwarding letter from Captain Tottenham, concerning a "Soldier's Scoop," together with Colonel Dillon's No. 115F, forwarding the same to your address, I have now the honor to report on the trials of this tool, which have been just completed.

2. A party of six sepoys, good workmen, having been specially trained to use the "Scoop," it was tested against the ordinary pick and shovel in the hands of equally good workmen, but not specially trained as follows :—

1.—In construction of shelter pits for one man, as laid down in Field Exercise book for 1870, the times taken were as follows :—

|                      | <i>Ordinary Soil.</i> | <i>Easy Soil.</i> |
|----------------------|-----------------------|-------------------|
| Scoop.....           | 20 minutes.           | 12 minutes.       |
| Pick and Shovel..... | 10 „                  | 5 „               |

In construction of shelter trenches as laid down in Field Exercise book 1870, the times were as follows :—

|                       | <i>Ordinary Soil.</i> | <i>Easy Soil.</i> |
|-----------------------|-----------------------|-------------------|
| Scoop .....           | 30 minutes.           | 20 minutes.       |
| Pick and Shovel ..... | 15 „                  | 6 „               |

The above are the averages of a number of trials. The Scoop was pitted against the Shovel and Pick at ordinary digging with similar results. The Scoop was also tried in difficult soil with unfavorable results.

II.—The Scoop was tried (one of its uses enumerated by the inventor) for cutting steps in steep slopes to aid in climbing. By its means the Sepoys were able to climb up a vertical revetment, by cutting holes in the face of it. The Scoop appears to be more adapted for this particular work than for any of the others enumerated.

III.—The Scoop was pitted against the Pick and Shovel at sloping off the sides of ditches and preparing roadways over impracticable ground for the passage of Artillery.

IV.—It was tried against the ordinary Jumper for loop-holing walls for musketry. While the Jumper made a hole in 3 minutes through an 18 inches brick wall, it took 15 minutes to make a similar one with the Scoop.

V.—Its qualities as a rifle rest were also tried, and a few rounds of ball cartridge fired through it.

VI.—The men were marched about, fully accoutred, carrying the Scoops in a spare "frog"—also charging over a ditch and up the face of a field work. There appears to be no inconvenience or danger of accidents in carrying the Scoop in this manner, but this would be better tested after wearing it for a long time, when the wearer might forget it and injure himself with its spearhead. So that to prevent its doing this or cutting and spoiling the soldier's clothes it would probably be necessary to cover it entirely in a case of some sort.

VII.—Besides the specially trained squad of six men, a large number of the corps have at different times been employed with the Scoop, so that there has been ample opportunity for observing its qualities. Untrained men find it is rather an awkward tool and can only work at about half the rate at which trained men can.

3. I beg to offer the following remarks on the above trials. In easy or ordinary soil the Scoop does about half the work of a pick and shovel in a given time—in difficult soil, which it is hard to find here, the comparison is much more unfavorable to it. I am unaware of the form of the trench which the inventor states he can construct in such an extraordinarily short time, so as to cover himself. I cannot, however, conceive a shorter way of getting under cover than by means of the shelter pit laid down in Field Exercise, and here too advantage is taken of the excavated earth which Captain Tottenham does not seem to take into account. The shortest time in which one of these could be constructed with the scoop was 12 minutes, and that in soil, which, once the turf was removed, was of the consistence of soft sand.

4. For rough work, such as forming a passage for Artillery over ditches or other impracticable ground, I think it would be so inefficient as to be practically useless.

5. For loop-holing walls it might on some occasions be useful, where no other implement was available. On a case of necessity, however, a bayonet or two might be sacrificed for this.

6. As a rifle rest the men did not like it. It is very difficult to fix in a comfortable position; the carbine with sling on cannot be got far enough through the hole, and would moreover be liable to damage from recoil over the sharp edge of the spade, and it requires care both to insert it, and to withdraw it.

Nothing can make a better rest than excavated earth, as usually used in field works, the additional cover obtained by the scoop would be so

small as to be almost inappreciable: the scoop too would generally appear a bright mark to the enemy. Altogether I have no hesitation in stating my opinion that its use as a rifle rest is *nil*.

7. The implement is awkward to use, partly from its necessarily small size and the constrained position it entails on the workman; but chiefly from the impossibility of getting an effective grip; whichever end was employed to work with, the men got their hands badly cut against the upper edge of the spade and had to use pieces of cloth to protect them. This defect might possibly be remedied to a certain extent by altering the shape of the handle. Captain Tottenham's own scoop with a wooden handle is rather better in this respect than those ordered to be made here, entirely of metal, but even it is still an awkward tool to use. The weight of one of these metal scoops is about  $1\frac{1}{2}$  lbs. There is also a danger to a careless or awkward man, or to any one using it in a hurry, from the sharp spear-like pick end.

8. In conclusion I would remark, that though on some occasions the possession of this scoop might be valuable, these occasions would be so rare as hardly to compensate for always having to bear its weight, whilst to render it efficient the soldier must, as demonstrated by Captain Tottenham in the simile of the pump, be thoroughly paractised with it, which would be difficult to ensure as a general rule. Out of India the soldier already carries as much as he conveniently can; if he can carry more, extra ammunition would seem to be the best addition. In India where his kit is carried for him, it is perhaps open to question whether he might not with advantage carry some light kind of ordinary intrenching tool, at times, when there would be a probability of using it; but it is also probable that a proportion of such tools attached to each company, for instance on a couple of mules or ponies, or in a hand cart would generally be more useful.

I have the honor to be,

Sir,

Your most obedient Servant,

F. R. MAUNSELL, *Lieut.-Colonel, R.E.,*

*Commandant Sappers and Miners.*

*N. B.—This report though so unfavorable to the Scoop, does not seem to take sufficiently into consideration the fact that the average weight of tools with Pioneer Regiments is 9lbs. Captain Tottenham looking to the acknowledged necessity for troops being trained to entrench themselves, promptly, proposes this tool as being much lighter and more handy than the ordinary pick and shovel.*

*It would be interesting, if Captain Tottenham were to train, say 12 fresh hands, to the use of the 'scoop', and 12 others, equally fresh, to the use of the pick and shovel, and then report the result; neither Colonel Maunsell, or Captain Tottenham's reports seem to be conclusive.*

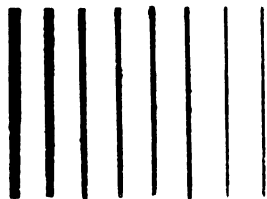




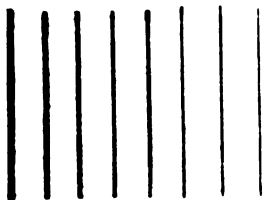
For reduction  
to  $\frac{1}{4}$



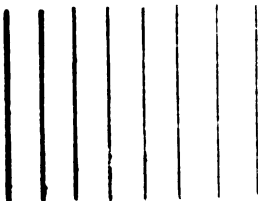
For reduction  
to  $\frac{1}{3}$



For reduction  
to  $\frac{1}{2}$



For reduction  
to Scale.



\* Effect when reduced.



## III.

# Instructions for the preparation of Drawings for reproduction by Photozincography.

(Placed at our disposal by COLONEL THULLIER, C.S.I., Surveyor General.)

## NOTIFICATION.

SURVEYOR GENERAL'S FIELD OFFICE,

*Sinla, 19th July 1871.*

With the view of facilitating the speedy publication of miscellaneous Maps, Plans and Drawings, which are constantly forwarded by local authorities to this department for immediate reproduction, and in order to prevent the disappointment and expense, which ensues when highly colored and brush shaded subjects are furnished, the following memorandum of instructions for the proper preparation of all Drawings, intended to be dealt with by the Photozincographic process, is published for general information.

H. L. THUILLIER, Colonel,

*Surveyor General of India.*

## Instructions.

As the great value of the Photozincographic process for reproducing accurate fac-similes of Manuscript plans and drawings of all kinds, either on the same or on a reduced scale, is rapidly becoming appreciated by officials in all departments of the State, the Photographic Branch of the Surveyor General's Office is constantly being called upon to reproduce drawings, which on inspection prove to be totally unfit for Photographic reproduction. As the requirements of the process may not be generally known, I have at the suggestion of the Surveyor General, drawn up the following brief instructions, embodying all the conditions essential to success, and I would strongly impress upon those interested in the subject, that success entirely depends upon the perfection of the original, and that a satisfactory result can only be obtained by strict observance of the following rules, which may be summed up in a few words—WHITE PAPER, BLACK INK, FIRM OPEN DRAWING. Neglect of these essentials will entail failure and disappointment.

I.—The paper on which the drawing is made, should be white and smooth, and kept as clean as possible, as well as free from creases and wrinkles.

II.—The drawing should be executed in Indian ink, freshly rubbed down, *quite black*, and free from grit or glaze.

III.—The lines should be firm and clean, not too close together. They must all be perfectly black, and *pale* ink must on no account be used. Thick lines in the printing and margins should be well filled in.

IV.—*Washes* of any colour except *very pale* blue, are inadmissible, but if necessary, *outlines* may be drawn in with strong burnt sienna, carmine, crimson lake, gamboge and similar colors, which will reproduce black. Any detail required to be shewn in the original, but not in the copy, may be drawn in with strong burnt sienna, crimson, lake, gamboge and similar colors which will reproduce black. Any detail required to be shewn in the original, but not in the copy, may be drawn in with pale cobalt blue.

V.—If cross hatching or shading is required, the lines composing it must be kept as open and distinct as possible, and they should not be too fine but firm enough to reproduce well. Intensity of shade should be shown by an increase in the thickness of the lines rather than by their being placed closer together, as it must be borne in mind, that throughout the process there is a tendency for the lines to thicken, so that, if they are too close, they are liable to block up in the printing, and the work will appear heavy and unsightly. This rule also applies to hill shading, the darker portions of which should be drawn in thick distinct lines, but not crossed and recrossed with fine lines.

VI.—River courses, lakes and tanks should be left *black*, and not filled in with fine lines. They may be indicated by a pale wash of blue without detriment to their reproduction.

VII.—As the process produces a perfect fac-simile of the original, it is essential that the latter should be complete in every respect, and the drawing, printing and writing, should be done in as neat a style as possible, so that the result may be fit for immediate publication, and not require to be altered or touched up. The hair strokes of the printing should not be too fine.

VIII.—When plans or drawings are intended for *reduction*, care must be taken to draw the lines of the proper thickness relatively to the scale of reduction ; thus supposing it is required to reduce a drawing to one-fourth the scale of the original, it will be necessary to draw every line of the original four times as thick as it should appear in the copy. The printing and detail must also be relatively large in proportion. This rule is often neglected, and the result is the loss of all the finer lines. When drawing for *reduction*, care must be taken to leave sufficient space between the lines in hill shading or cross hatching, so that they may be well separated when reduced, otherwise, they will block up in the printing and become a black smudge. When possible, it is better to draw the original on a larger scale than is required for the copy, as a photographic *reduction* comes out much sharper and clearer than a *reproduction*. The scale of lines given in the plate will serve as a guide to shew the necessary average thickness of the lines in drawings for reduction or reproduction.

IX.—It is immaterial how the scales on maps for *reproduction* are shewn, but in all cases when the copy is to be on a different scale from the original, the scale should not be stated as so many feet, yards, &c., to an inch, but merely as a scale of feet, yards or miles.

J. WATERHOUSE, *Captain,*

*Asst. Surveyor General.*

SURVEYOR-GENERAL'S OFFICE, }  
*Calcutta, 1st July, 1871.* }



## IV.

**Historical Records of the Poona Horse.**

*Compiled by Captain and Adjutant G. G. Hogg, Poona Horse.*

The Poona Horse was raised in the year 1817, subsequently to the Treaty of Poona. By this the article in the Treaty of 1817. Bassein, compelling the Peishwa to keep up contingents of horse and foot for the service of the British Government, was annulled, and in lieu of these contingents it was determined to raise a reformed body of auxiliary troops under the command of British officers. It was on this occasion that the Poona Horse was called into existence.

The corps was originally constituted for service during the Mah-ratta war, and they were promised pay at the following rates, viz:—

|                  |         |             |
|------------------|---------|-------------|
| Russaldars,..... | Rs. 500 | per mensem. |
| Jemadars,.....   | „ 200   | ditto       |
| Duffadars,.....  | „ 60    | ditto       |
| Sowars,.....     | „ 40    | ditto       |

in addition to which high rates of pay many other indulgences, such as compensation for horses killed and wounded in action, not entertaining men of low caste, and other promises of a like nature, were granted.

The principal body was raised in Poona, large levies being also made at Aurungabad, Nagpore, Baroda and Seroor. A corps of 500 men was also raised by Colonel Skinner in Hindoostan, to whom likewise special rates of pay and special privileges were granted, and the corps was styled the Poona Auxiliary Horse.

The orders for the raising of the regiment had been issued but a short time, and the formation was still in progress, when its services were called for for the first time. Re-inforcements for Poona having been sent for to Seroor, a detachment of the regiment, consisting of 300 sabres, marched on the 31st of December 1817 under Lieutenant Swanstone, with the 3rd Battalion of the 2nd Grenadiers, 2 guns and 26 European Artillerymen, the whole under the command of Captain Staunton.

On their march they were opposed by the Peishwa's Army, consisting of 20,000 horse and 800 foot, and then followed the memorable and heroic defence of "Korygaon," in which the casualties of the Auxiliary Horse amounted to 46 killed and 26 wounded, besides many more missing, Lieutenant Swanstone being amongst the wounded. The colors of the regiment have not the word "Korygaon" inscribed on them owing to some delay in the claim being preferred, but the monument erected on the spot bears eternal testimony to the part the regiment took in sharing the honors of that glorious day.

On the subsequent flight of the Peishwa a detachment of 1,200 sabres of the regiment formed part of a force commanded by General Smith sent in pursuit, and it was engaged at the Cavalry action of Ashta, which resulted in the defeat of the Peishwa and the capture of the Rajah of Sattara.

1818.

On the march back to Seroor a portion of the regiment under Captain Davies, engaged a party of Mahratta Cavalry near "Jehlum," which terminated in the capture of the Peishwa's younger brother, Chinnajee Apa, and one of his best officers, Apa Desay Niphankar. The regiment was subsequently engaged at the taking of "Malligaon," and the affairs at "Baitawah," "Amulnair" and "Burdul" in Candeish; at the taking of the fort "Purchetghur" and various other minor skirmishes.

A detachment of the regiment under Captain Swanstone also captured Trumbuckjee Danglia, for which services they obtained the special thanks of Government.

The strength of the regiment at this time, as appears from a return, dated 1st September 1818, was 6,440 sabres of all ranks, which were divided into 8 divisions, the whole under the command of Lieutenant-Colonel Cunnyngame, and they were armed with sabres, lances and matchlocks.

On the dissolution of the Mahratta confederacy and the consequent tranquility of the country, considerable reductions were ordered, and by the 1st of October 1819 the number of divisions in the corps was reduced to 4 and the total number of sabres to 2,784. A further reduction took place in 1828, reducing the strength to 1,132 sabres, and by the 25th September 1830, the establishment was fixed at 800 sabres, and number of divisions at two, the Head Quarters of both being ordered to Seroor. The regiment in the meantime was employed in various quarters; and amongst other services, the following may be mentioned.

A detachment of 200 sabres under Major Spiller were present at the storm and capture of Kithoor in 1824.

In 1826 a troop, consisting of 2 Duffadars and 42 Sowars were sent to Persia as an escort to the British Envoy, Lieutenant-Colonel Macdonald. Of this detachment 1 Duffadar and 16 Sowars returned to Bombay at the end of the same year, in consequence of apprehended difficulty in providing for so many men during the approaching winter at Tabrez, and on their departure the Duffadar "Fayaz Khan" was presented by the Envoy with a sword and a horse. The remainder of the detachment were on escort duty till the year 1828, and many records in the regiment testify to the zeal and devotion of these men to their duty under most severe trials; amongst many the following extracts of letters may be cited :—

1. *From the Commandant of the Escort to Captain Spiller.*

"I am desired by the Envoy to say that on the departure of these men, after a two years' tour of duty in very unsettled times and under the disadvantages of a severe and trying foreign climate, he cannot express himself too highly in approbation of their steady and respectable behaviour, their zeal, attention and fidelity, when exposed to considerable hardships."

2. *Letter from the Envoy to Sir J. Malcolm.*

"It makes me quite melancholy parting with the troopers. I always felt certain of their standing by one in any case of difficulty or danger in this distracted country."

The Duffadar commanding the remainder of the detachment was for his services on the occasion promoted by Government to the rank of Jemadar, presented with a 'Khilat,' and subsequently appointed to command the Southern Mahratta Contingent with the rank of Russaldar, and extra pay of 150 rpees per mensem, whilst each Sowar was presented with one month's pay.

About the same time as the troop started off on escort duty to  
 1826. Persia a portion of the regiment was employed in Cutch against banditti under the command of Jemadar Yenkut Rao, and their services received most honorable mention from the Resident and the officer commanding the Cutch Auxiliary  
 1828. Force. In June 1828, the special thanks of Government were also tendered to Captain Spiller for the capture of "Bome Ali" and his followers, an event which was considered of considerable importance as connected with the peace of the country.

In 1836 two hundred sabres formed part of the force under  
 1836. Captain Outram for the suppression of Sooruj Mull and his gang.

Detachments also of the regiment served against the banditti in the Poorundhur and Punderpoor districts, and against various other bands in the Poona, Nuggur, Candeish, and other districts, their detachments extending from close to Dharwar to the south, along the range of Ghâts from Sapoor to Junair and Nassick, and thence to Dhoolia. And as instances of their rapid marching it may be mentioned that a detachment of 100 sabres under Captain Spiller marched 150 miles against a band in the Punderpoor district in 3 marches, which resulted in the capture of the head of the band and its entire dispersion; and on another occasion on the rising of the Bheels in Candeish, a detachment of 150 men collected from Joonair, Nassick and Seroor, marched to Dhoolia, a distance of 200 miles in 5 days, whilst a wing of Native Infantry which was ordered at the same time did not reach Malligaon under a month.

From this period up to the breaking out of the Afghanistan, war the regiment was employed in various duties in the provinces of Poona, Candeish, Ahmednuggur, Dharwar, the Concan, Baroda and Cutch, their services being made use of for escorting prisoners and treasure, patrolling roads, apprehending delinquents, and various other duties connected with the peace of the country. The only changes that took place in the organization of the corps during this period, were,  
 that in 1836, flint carbines were substituted for  
 1836. matchlocks and in the same year the regiment was placed under the orders of the Commander-in-Chief.

In October 1838, on the breaking out of the Afghan war, 300 sabres, subsequently augmented to 500, from the Cutch division, 1838. (which was in 1840 transferred to make the nucleus of the Sind Irregular Horse) proceeded on field service to Afghanistan. These men were collected from various outposts in the Poona, Nuggur, and Candeish districts, and in order to replace them a new levy, amounting to a similar number of sabres was ordered 1839. to be raised in January 1839, the levy being completed by June of the same year.

The Head Quarters of the regiment embarked at Bombay on the 17th and 18th of December 1838, under the command of Major Cunyng-hame, and served with the Army of the Indus, being present at the storming of Ghuznee, the destruction of Abdool Rahman's forts in the Ghilzie country by Colonel Outram, and the occupation of Cabool in 1839. On the return of Lord Keane to India a detachment of 150 sabres under Lieutenant Loch of the 1st Light Cavalry, remained in Upper Sind, 100 of whom accompanied Major Clibborn's force and were present at the battle of "Nuffosk." On this occasion the Infantry had been twice beaten back from the assault of the hill, when a party of 50 men of the Poona Auxiliary Horse volunteered to dismount, and in conjunction with a similar detail of their old comrades in the Sind Irregular Horse, attempted to storm the heights sword in hand, but owing to the number and strength of the enemy they were driven back with great loss, though not till they left their Jemadar, 34 men and 15 horses dead on the field (exclusive of the casualties of the Sind Irregular Horse). It was on this occasion that an act of gallantry was performed by Sowar Summund Khan which deserves passing notice. Lieutenant Loch, in leading his men on foot to the attack, had been severely wounded by a sabre cut on the head, after which he was struck by a stone, the blow of which rendered him senseless. His orderly bargeer Sumund Khan at once removed him in the face of the enemy, and placed him in a dooly, the dooly bearers, however, almost immediately deserted him, and though surrounded by the enemy in every direction Summund Khan never left his officer till he succeeded in placing him on Sillidar Ahmed Buxsh Khan's horse and thus saving his life.

Detachments of the regiment also served at the taking of "Khelat," and the engagements at Kotla, "Gundawa" and "Dadur."

The remains of the Afghanistan detachment returned to Seroor shortly afterwards, and in 1842 a second detachment of 1842. 250 sabres proceeded on service to Upper Sind. They accompanied General England to "Kandahar," were present at the first attack on "Hykulzye" in March, and also on the 2nd April when the pass was forced; joined General Nott's Army and were present at the battle of "Kandahar," when they captured a Standard.

After this they returned to Lower Sind, and were present at the battles of "Meancee" and "Hyderabad." The services of 1843. this detachment were brought to notice in a dispatch to the Governor General.



In November 1842, fifty sabres proceeded on service to Aden where they remained for upwards of three years, their uniform good conduct during their service there, eliciting a most complimentary order on their departure.

From this period, up to the breaking out of the Persian war, the regiment was employed in various minor operations. In 1844. 1844 one hundred men, under Captain Fraser, served with a force in the Southern Mahratta country under General Delamotte, and were present at the capture of the hill forts of Munohur and Mussoontoos, and were actively employed in the Sawuntwaree country until it was quieted and the force withdrawn.

In 1845 a detachment of sixty men was employed with the force in the "Northern Concan" for the suppression of Ragoojee Bhangria.

A detachment of the regiment under Captain Macdonald served in Upper Sind from November 1848 to June 1849.

In November 1851, two hundred sabres under Captain Westropp proceeded to Bombay, and performed garrison duty there during the Mussulman and Parsee disturbances. Other detachments during the whole of this period performed valuable services including the operations against the Ramoosees under Ooneah's son in the "Poona districts," against the Bheels in Candeish, and in the different Districts, in which their Detachments were stationed.

Two changes in the organization of the Regiment during this period are also worthy of being noted, viz:—In 1845 an augmentation of fifty sabres took place.

In January 1847 the regiment was re-organized and their designation changed to the Poona Irregular Horse, and on the 30th of March of the same year commissions were sanctioned for the Native Officers. In 1849, Military Law was introduced, and the flint carbine was superseded by the introduction of Percussion Arms. In the same year the strength of the regiment was reduced to 752 sabres, and on the 1st of January 1850 the regiment was constituted a Military Corps.

In December 1852, 200 sabres under Command of Captain Westropp proceeded by forced marches to Sowdah in Candeish to quell disturbances there, and returned to Seroor in February 1853.

On the 17th of October 1856, the Head Quarters of the Regiment consisting of two hundred sabres under the command of Lieutenant Colonel Tapp marched from Seroor for the "Oolwar Bandar" 'en route' to join the Persian Expeditionary Force under the command of Major General Stalker, C. B., they landed at Halilah

Bay, and were present at the action of "Reshire," the surrender of "Bushire," and destruction of the enemy's magazines at Chakota (received the thanks of the General Officer in Field Force orders.) They also accompanied the expedition under Lieutenant General Outram, C. B., into the interior of the country, and were present at the occupation of the enemy's entrenched camp at "Borazjaon" and at the night attack and Battle of "Kooshab." In this latter engagement two troops 146 sabres strong destroyed the 1st Kuskai Regiment of Fars spiking a gun and capturing their standard which was crowned with a silver hand, and which by the permission of Government is now always carried with the 1st Squadron of the Regiment. (The Regiment was thanked in despatches for its services in Persia.)

A second detachment of two hundred sabres landed at Bushire in April 1857, but were too late to take any active part in the operations. Both detachments returned to India in June 1857, where they arrived during the month of July and commencement of August, with the exception of about 70 men whose transport had been wrecked, and who did not reach their destination till September. During the absence of the regiment on service in Persia an augmentation of two hundred sabres was ordered, which commencing in February 1857, was completed in August of the same year.

Very shortly after the return of the Head Quarters to Seroor various detachments of the regiment were called into requisition for service against the Bheels and other rebel bands. A detachment under Russaidar Ahmed Buxsh Khan was present in the engagement with Bhagoojee Naique at "Nandoor" in October 1857, on which occasion Lieutenant Henry of the Police was killed. Their gallantry on this occasion was made mention of in the Government Resolution notifying the event. On the 5th of October a detachment of one hundred sabres under the command of Lieutenant Smith joined the force under Colonel Macan; which was serving against Bhagoojee Naique in the Nuggur Districts, and were present at the action of "Sumsherpoor," another detachment of fifty sabres under Russaldar Nizamooddeen Khan was present at the action of Mandwell, and Captain Thatcher reporting on the engagement stated "their conduct was the admiration of all."

A detachment of 13 sabres also served under Captain Nuttall, in operations against Bhagoojee's band and took part in the engagements which took place between the 4th November and the 21st of December 1857, which resulted in the capture and death of 36 of the band, Bhagoojee's brother being amongst the slain: their "splendid and soldier-like conduct" on these occasions was brought prominently to notice by Captain Nuttall in his Official Report.

Fifty sabres were also present with the Field Force under Captain Pottinger at the engagement of Mahdeo Kapahar, which resulted in the dispersion of Bhagoojee's

1858.

band. Two detachment of fifty sabres each under Naib Russaldar Hyth Meer Khan and Russaidar Ghoolam Hoosen Khan, the whole under Lieutenant La Touche, 2nd in command, served with the right column of the Sathpoora Field Force under Major Evans, and were present at the action of "Amba Pancee." Major Evans, in his report of the action states "the more credit is due that in this as in every instance their services have been required, no ground, however difficult, and apparently impracticable, was ever for a moment suffered to obstruct their progress or to impair their usefulness." On the same day one hundred men

Major Evans' Official Report.

under Lieutenant La Touche were present with the Left Column under Captain Sealy at the action of "Daba Bawree" "*their steadiness under fire*" on the occasion being particularly brought to notice by Captain Sealy; and the uniform good conduct of the detachments was commented on by Major Evans on the Force being broken up. A detachment of 200 sabres accompanied the Field Force in pursuit of Tantia Topee under Lieutenant La Touche and other detachments were employed under Major Powell and Captain Bowdich in various other minor operations in the "Poona Nuggur" and "Cundeish Districts."

1860. In November 1860, a reduction of two hundred sabres was ordered...

1861. On the 1st January 1861, on the reorganisation of all the Cavalry of the Bombay Presidency a further reduction of 32 sabres was carried out, and the remaining 720 sabres were divided into two regiments of 360 sabres each, the designation of the regiment was at the same time altered from "Poona Irregular Horse" to the 4th and 5th Regiments Bombay Cavalry (Poona Horse.) The 4th Regiment under the command of Captain Westropp was ordered to Malligaon whilst the 5th Regiment under the command of Captain Moore remained in Seroor.

1862. In July 1862, on the further reduction of the Cavalry the 5th Regiment of Poona Horse was amongst others disbanded, and the establishment of the remaining Regiment increased to 499 sabres, which with 11 supernumeraries that were allowed to remain on the strength made the total number of sabres in the Poona Horse up to 517 and its Head Quarters were fixed at Seroor.

Shortly after this the men on duty in the "Poona and Nuggur districts" were withdrawn.

1864-5. In 1864 a detachment was ordered as an escort to the Resident at Baroda, and in the following year a Troop under a Native Officer marched for garrison duty to Sholapoor. On the 5th of November 1867, the Sholapoor troop rejoined Head Quarters at Seroor, and on the 7th idem the Left Wing consisting of 250 sabres marched for Bombay en route to Jacobabad. The Wing embarked in transports on the 21st No-

1868. vember under the command of Captain La Touche and arrived at Jacobabad on the 15th January 1868, where it remained until the close of the Abyssinian War, its uniform good conduct during its stay there eliciting complimentary orders from Sir H. Green, Colonel Phayre, and the Officer Commanding the Sind Division. It marched from Jacobabad en route to rejoin Head Quarters on the 22nd October 1868, and reached Seroor on the 20th January 1869, having been detained a few days at the Presidency for escort duty with the Governor. In the meantime some men of the Baroda party distinguished themselves in an engagement with rebel Naikras in Guzerat. Naib Russaldar Mahomed Khan commanding the Baroda detachment, and 10 Sowars had on the out-break of the Naikra rebellion been placed at the disposal of Captain MacLeod commanding the Field detachments sent out against them. On the 16th February 1861 they attacked the rebel band at the village of "Narek," killing some of its principal leaders, and dealing such a blow to the rebellion as led to the subsequent submission of Naikras. On this occasion Naib Russaldar Mahomed Khan fell pierced with arrows, and the official reports announcing his death testified to his great gallantry during the engagement in the most eulogistic terms, whilst Government as a mark of their approbation brought his name prominently to notice in the *Gazette* notifying the event.

R. M. WESTROPP, *Colonel,*  
*Commandant Poona Horse.*

CAMP SEROOR,        }  
9th September 1871. }

---

#### RECORD OF SERVICES OF THE OFFICERS, POONA HORSE.

Captain C. D. U. La Touche, served as Adjutant, Poona Horse, with the Persian Expeditionary Force in 1856-7, at the attack on "Reshire," the capture of "Bushire," destruction of the enemy's magazines at Chakota, at "Burazjaon" and Battle of "Khooshab" (Medal and Clasps). In command of a Squadron Poona Horse with the Satpoora Field Force and present at the action of "Dabah Bawree." fought with the insurgent chiefs on the 11th April 1858. Served under Sir H. Rose in 1859-60 on the Frontier of Khandeish, and in Nimar on the occasion of the passage of Tantia Topsee's Army through the latter province (Medal.)

Captain R. Stevenson, served with the 2nd Light Cavalry at the taking of "Minbhaira;" present when the Mundesoor rebels advanced on Neemuch and with a troop during the "Siege of Neemuch," at the assault and capture of Kootah and with the columns under Major General Sir H. Roberts, Sir J. Michel, Brigadiers Parke and Somerset in pursuit of Tantia Topsee in 1858-9, (Medal and Clasps.)

Major J. H. P. Malcolmson served with 2nd Troop Bombay Horse Artillery and as Brigade Major of Artillery, and Adjutant of Bombay

Artillery with Rajpootana Field Division under Major General Sir H. G. Roberts, K. C. B., at the siege and capture by assault, of Kotha and pursuit of the Garrison under Colonel Owen; present at the battle of the Bunass and in the pursuit of the rebels, which ended in the Cavalry affair at the Kooshanah, during which time he acted as Orderly Officer to Brigadier Honner, C. B., and had his charger wounded in two places by sabre-cuts. (Medal and clasps.)

R. M. WESTROPP, *Colonel,*  
*Commandant Poona Horse.*

---

| Appointments.           | RANK AND NAMES.            | Date of Appointment. | Date of joining the Corps. | Remarks.               |
|-------------------------|----------------------------|----------------------|----------------------------|------------------------|
| Commandant ...          | Col. R. M. Westropp ...    | 1st Feby. '60        | 27th Jany. '47             |                        |
| 2nd in Command ...      | Major C. D. W. LaTouche    | 28th Dec. '60        | 21st Jany. '55             |                        |
| 2nd Squadron Officer..  | Capt. R. G. T. Stevenson   | 18th Feby. '67       | 15th Feby. '67             |                        |
| Offg. 2nd Sqd. Officer. | Major J. H. P. Malcolmson. | 19th Augt. '71       | 22nd Augt. '71             |                        |
| 3rd Squadron Officer..  | Capt. H. H. D. Owen ...    | 25th Nov. '64        | 19th April '61             |                        |
| 1st Sqd. Subaltern ...  | Capt. J. Philips ...       | 23rd May '64         | 23rd May '64               | Comg. Candeish detach. |
| Adjutant ...            | Capt. G. C. Hogg ...       | 16th Feby '63        | 16th Feby. '63             |                        |
| 2nd Sqd. Subaltern ...  | Ensign H. C. Hogg. ..      | 15th July '71        | 22nd Augt. '71             |                        |
| Surgeon ...             | D. Simpson ...             | 18th Feby. '67       | 18th Feby. '67             |                        |

## Distribution Return.

|                            | Russaldar Major. | Russaldars. | Woodie Major. | Russaldars. | Naib Russaldars. | Jamedars. | Kote Duffedar Major. | Farrier Major. | Kote Duffedars. | Duffedars, | Nishan Burdars. | Trumpeters. | Naigues. | Sowars. |
|----------------------------|------------------|-------------|---------------|-------------|------------------|-----------|----------------------|----------------|-----------------|------------|-----------------|-------------|----------|---------|
| Present at Head Quarters.. | 1                | 3           | 2             | 1           | 4                | 4         | 1                    | 1              | 5               | 19         | 1               | 4           | 17       | 198     |
| Candeish Detachment ..     | ...              | 1           | ...           | 1           | ...              | 1         | ...                  | ...            | 1               | 8          | 2               | 1           | 8        | 127     |
| Baroda Detachment          | ...              | ...         | ...           | ...         | 1                | ...       | ...                  | ...            | ...             | 1          | ...             | ...         | ...      | 12      |
| Kulladghee Detachment...   | ...              | 1           | ...           | 1           | 1                | 1         | ...                  | ...            | 1               | 5          | 1               | 1           | 5        | 63      |
|                            | 1                | 5           | 2             | 3           | 6                | 6         | 1                    | 1              | 7               | 33         | 4               | 6           | 30       | 400     |

*The following "List of Engineer Officers of the late Hon'ble East India Company's service in the Bengal Presidency, who have been killed in war in India, or who have died of wounds received in action between the year 1860 and 1861, when the Royal and Indian Engineers were amalgamated," has been placed at our disposal for publication, and may prove interesting to our readers—*

| Rank.                         | Names.                        | REMARKS.                                                                                                            |
|-------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Lieutenant .....              | Patrick Stewart .....         | Killed 6th Feb. 1792, at Seringapatam.                                                                              |
| Lieutenant .....              | John Henning Jones .....      | Killed 14th Nov. 1807, at the siege of Comona.                                                                      |
| Lieutenant .....              | William Elliott Morrison.     | Died 6th Jan. 1815 (in the camp of Major Genl. Marley, Comdg. a Divn. against Nepaul) of wounds received in action. |
| 1st Lieut. ....               | Joseph Tindall .....          | Killed 1st Jan 1826, in action at Bhurtpore.                                                                        |
| 2nd Lieut. ....               | James Sutherland Broadfoot.   | Killed in action, near Purwan in the Kohistan of Cabool, 2nd Nov. 1840.                                             |
| 1st Lieut. ....               | Robert Pigou .....            | Killed in action in the Nazian Valley, Affganistan, 24th Feb. 1841.                                                 |
| 1st Lieut. ....               | John Leigh Doyle Sturt.       | Killed in action in Affghanistan, 18th Jan. 1842.                                                                   |
| Major & Bt. Lt.-Colonel ..... | Edward Sanders, C. B. ...     | Killed in action near Gwalior, 29th December 1843.                                                                  |
| 2nd Lieut. ....               | Benjamin Martin Hutchinson.   | Died 12th March 1849, at Goojerat, from wounds received in action there.                                            |
| 2nd Lieut. ....               | Arthur Boulnois .....         | Killed near Michnee (Peshawur) by a party of men of the Momund Tribe, 14th Jan. 1852.                               |
| 2nd Lieut. ....               | Leverton Donaldson .....      | Died 12th April 1852, from wounds received in action with the Burmese, near Rangoon.                                |
| 1st Lieut. ....               | Charles Daubuz Innes...       | Killed by the mutineers at Allahabad, 6th June 1857.                                                                |
| Captain .....                 | George William Wright Fulton. | Killed at the siege of Lucknow 14th Sept. 1857.                                                                     |
| 1st Lieut. ....               | Elliot Pakenham Brownlow.     | Died 17th March, 1858 at Lucknow, from the effects of a Gun-powder explosion.                                       |
| 1st Lieut. ....               | Swynfen Charles Jervis...     | Killed by the insurgents at Cawnpore, 27th June 1857.                                                               |
| 2nd Lieut. ....               | Francis Whiting.....          | Killed in action at Delhi, 14th Sept. 1857.                                                                         |
| Major .....                   | John Anderson .....           | Died 11th Aug. 1857, in the Garrison of Lucknow.                                                                    |
| Captain .....                 | Francis Whiting .....         | Killed by the insurgents at Cawnpore, 27th June 1857.                                                               |
| 1st Lieut. ....               | Duncan Charles Home ...       | Killed 29th Sept. 1857 when blowing up one of the bastions at Bolundshuhur.                                         |
| 2nd Lieut. ....               | John Rivaz Monckton ...       | Killed at Cawnpore by the mutineers on the 12th June 1857.                                                          |
| 1st Lieut. ....               | Phillip Salkeld .....         | Died 11th Oct. 1857. from wounds received at the siege of Delhi.                                                    |
| 2nd Lieut. ....               | Edward Jones .....            | Died 24th July 1857, in camp before Delhi, from wounds received in action on 18th idem.                             |
| 1st Lieut. ....               | Edmund Walker .....           | Died 13th July 1857, of wounds received in action before Delhi.                                                     |

Perhaps this list may recall bygone memories among the old Bengal Engineers, and induce some one of the many distinguished soldiers whose pride, it once was to belong to that corps (and now is, no less, to remember their former connection with it) to preserve in our pages a record of the services of their old regiment.





## TRANSLATION.

**Tactics of the Prussian Infantry during the Campaign of 1866,  
by M. Heintz, &c.**

---

(*Conference sur la Tactique de l'Infanterie Prussienne pendant la Campagne de 1866. Rapporteur M. HEINTZ, Chef de Battalion au 3rd Regiment de Voltigeurs de la Garde Imperiale.*)

---

*Translated by COLONEL OSBORNE, C. B., 16th Regiment.*

---

If it be granted that modern wars offer to the three Arms equal opportunities of distinction, it must nevertheless be affirmed that the Infantry is called upon to play the principal part therein.

This observation derives a striking confirmation from a study of the campaign of 1866, when the Prussian Infantry, by its aptitude for fighting on broken ground, and especially by the effect of its fire, as novel as it was formidable, exercised a really decisive influence on the fortunes of the war.

To write the history of the Infantry, therefore, on this occasion, would in point of fact be writing the history of the entire campaign; but as this is not our object, we will confine ourselves to narrating those points which appear most characteristic of the mode of action of the Prussian Infantry on the battle field, accompanied with our own observations.

*A Combat in Line.*

A body of Prussian troops, whatever its strength may be, always faces the enemy in the same order, since it is divided invariably into three principal parts—the advanced guard, the main body and the reserve.

The Prussians do not understand by the term “advance guard” the small body whose duty it is to reconnoitre in front of the column: they have another name for this—*Vorhut* or *Vortrupp*, but rather the troops who are to commence the battle and to bear its brunt in the first instance.

As a rule, each of these divisions is drawn up in two lines in conformity with a general principle adopted by them, that a body of troops, small or great, a regiment for instance in order of battle (*rendezvous stellung*) should be drawn up in two lines at least, but in three if possible. The third being sometimes represented merely by a battalion or a portion of a battalion, even in movements carried on in peace the above principle is always enforced.

For a division of Infantry, the advance guard is usually formed of three or four battalions generally taken from different regiments. One

or two batteries, and the whole or part of a Cavalry regiment. It is commanded by a General or Superior Officer named expressly for the duty.

The reserve is commanded and composed usually in the same manner, while the main body remains under the personal command of the General of division.

In making these dispositions, the unity of brigades is oftener than not quite disregarded; thus after Sadowa the advanced guard of the 5th Corps commanded by a general of division was made up of the third battalions of the 'Corps d'Armée.'

From this it follows that the normal constitution of the division or corps is broken up, and that the majority of the higher ranks of officers are taken away from their own commands. It even sometimes happens that one or two Generals of Brigade no longer hold any command whatever. This is a rather surprising state of affairs among a people so methodical as the Prussians.

In fact, we cannot satisfactorily explain this abnormal composition of the advance guard, which involves a breaking up of the other portion of the corps: why is it (we ask ourselves) that the Prussians, after having in time of peace organised their force, in a manner so scrupulously regular and so favorable to a rapid transfer to the state of war, sacrifice so quickly in actual war, this mathematical organisation, in order, to substitute for it a system which mixes up everything and must of necessity entail confusion?

The reciprocal advantage of acquaintance of long standing between chiefs and subaltern officers, and the mutual confidence resulting therefrom, is neutralised for the sake of considerations, the value of which it is difficult to understand.

By the Prussian system, the advance guard bears the brunt of the fighting and consequently sustains the greatest losses. Is it with the view of distributing equally the losses as well as the honor of going under fire, that each regiment is called upon to furnish its contingent? If this be the case, it is merely a question of equity if looked upon as a matter of "*amour propre*," or of equality, if we look to the effective numbers of battalions. Or on the other hand must we look for its explanation to social and political, rather than to military reasons? For we know that in Prussia each corps is constantly recruited in the same district, and it is easy to understand that any great losses incurred by a single regiment would be cruelly felt in its own country.

In whatever light we may regard this unusual composition of the advanced guard, one point at least stands out in relief, namely the intention, or principle at all events, that it should play a distinct part and one entirely different to that assigned to advanced guards amongst us.

In point of fact its mission is not only to commence the battle, but to support the enemy's attack as long as its efforts, stretched to their ut-

most limits, can be sustained ; as it is a Prussian rule to employ as small a force as possible at one time, and to exact from it as much as they can.

Whenever therefore we have to fight a corps of Prussian Infantry, it will be found divided into three distinct parts, each of which can fight unsupported or isolated, each drawn up with a small rather than an extended front, and each acting by successive rather than by a simultaneous attack. This breaking up into fractions is the result of a system adopted on principle, and which constitutes "*l'ordre perpendiculaire*" for the bringing of which to perfection, the Prussians would willingly take out a patent, while acknowledging that the merit of the original idea was due to Napoleon I., and which they say themselves that they have "substituted with incontestable advantage for the line order prevailing in most other armies, including the French."

With columns thus formed, we usually see the Prussians taking the initiative. The first line of the advance guard always formed in columns of companies, advanced upon the enemy, its front covered by skirmishers, some of whom fill up the intervals between the columns, while others are posted in column on rear of the wings.

In every case this line halts when it gets within long range of the enemy and sets its skirmishers to work. The latter advance about 400 paces in front of battalions, followed by companies or sections, with close ranks as supports, and taking advantage of every accident of ground. Their duty is first to drive back the enemy's skirmishers, and then by a rapid attack endeavour to repulse his first line ; if unsuccessful this duty devolves upon the supports, and the latter recalling the skirmishers into the intervals between them, the line of skirmishers and supports advances against the enemy, and halts when within 300 or 400 paces, commencing to fire volleys by word of command.

If these volleys put the enemy to flight, the skirmishers alone take up the pursuit ; but if they fail or the enemy in his turn advances, the companies either commence independent firing ("*schnell feuer*") or attack with the bayonet with shouts of Hurrah ! until they receive the order to halt.

If the attack is repulsed, the skirmishers rapidly come to the front and endeavour to cover the retreat of the companies, the latter taking up such a position in rear as will admit of a subsequent advance ; meanwhile the second line, formed of battalions in double column, advances in its turn and renews the attack on the same principles.

Such is the theory of Infantry fighting with the Prussians, but it is hardly necessary to say that on actual service it cannot always be carried on.

On the contrary from a close study of various actions it is proved, that battles are far from being carried on with that regularity and connection enjoined by such precept. We will resume this subject by and by, when considering the employment of company columns and of the new tactics

which they have given rise to. And we will now only call attention to the fact, that the principle of separate action reveals itself even here by the, to a certain extent, independent part which the skirmishers must fill in directing their attacks separately upon the enemy's first line. The following is the result of our own observations on this point.

The movements of the advance guard are usually executed with great vigor, but at the same time no means are neglected to guard its flanks and communications. It is usually the main body that perform the latter duties by means of battalions or companies detached to take up fitting positions. Prussian Generals are very fond of directing their attacks on an adversary's wing, and they are great partisans of turning movements; of this the action at Blumenau affords a very remarkable instance; very rarely do we see them attack the centre of a position.

In general their officers must be credited with much ability in handling their men, and great intelligence in availing themselves of the accidents of ground, qualities which on more than one occasion, have enabled them to make up for numerical inferiority. In the army of the Mein especially, where such inferiority was the rule, they were observed to combine the defensive and offensive in the happiest manner, to profit by the accidents of ground in such a way as to derive from their weapons the greatest possible benefit, and on more than one occasion to inflict upon their adversaries the most disastrous checks.

As we have already mentioned, their attacks were usually made in columns of companies with skirmishers in the intervals, but whenever the enemy was either in force, or appeared in a very solid formation, or whenever it appeared advisable to deliver a decisive blow, each battalion formed itself into a column of attack and the entire line marched upon the enemy with colors flying and band playing.

Among many instances of movements of this sort executed with complete success, we may cite the attack of the Wittich Brigade at Skallitz, and that of the 14th Division near Prohlitz against the Saxon army. This latter operation especially was very remarkable. The Brigade Schwartz-Koppen, which had been under arms since 12 o'clock, had to traverse a distance of 1,600 paces over a muddy plain under the concentric fire of 16 guns, and in spite of these difficulties it succeeded in overthrowing the main body of the Saxon army. It appears that the Prussian officers prevented their men from firing a single shot during the advance, a precaution which evidently reserved for the actual shock of battle the entire strength and impetus of the Brigade.

When acting on the defensive, the Prussians always allow their enemy to approach within 3 or 400 paces, when they receive him with one or two volleys fired by word of command, followed if necessary by independent firing, the effect of which by the needle gun is overwhelming.

Positions chosen with care, the great attention paid by the men to

the commands of their officers, and calmness and self possession in act of firing, all contribute most powerfully to the success of such manœuvres.

We observe, moreover, three occasions on which the Prussians, in order to give their fire its maximum of intensity, formed in four ranks, but the first two kneeling and the rear ones standing, all four delivering their fire sumultaneously.

First at Podol, an action which took place at night, the 2nd Battalion 31st Regiment, when on the point of being charged by a strong Austrian column, assumed the above formation, and allowing the enemy to approach to 30 paces, fired a single volley and then charged with the bayonet. The attack was repulsed.

Secondly, at Sadowa, two companies of the 35th Regiment in the same formation and under similar circumstances, defeated a Cavalry charge executed by the Windischgrætz Brigade, and lastly at Heim Tauberbischoffsheim, a company charged with the defence of the bridge in the same formation, drove back several times and overwhelmed by its fire the strong columns of Wurtembergers who tried to force the passage of the Tauber. The circumstances attending this latter action are worthy of attention on other grounds, for it was there seen how the Prussians, profiting by the disorder carried into the enemy's ranks, by the beaten columns of attack, became the assailants in their turn, and crossed the river with four of the five battalions composing the Brigade, partly by a charge across the bridge and partly by a ford or by swimming.

On reaching the opposite bank, they found the enemy, who were treble their own numbers, so strongly posted that it was evidently impossible to dislodge them; recognising this fact, they at once resumed the defensive, and taking advantage of some large buildings on the enemy's side of the river, established themselves so firmly that all the efforts of the Wurtembergers to retake the position were frustrated by the rapidity and precision of the Prussian fire. After a struggle of several hours, the enemy, in spite of their enormous numerical superiority, were forced to withdraw, leaving 574 men killed and wounded behind them, while the Prussians only lost 123 men during the entire day.

This is another instance of how well the Prussians understand how to profit by choice of positions as well as by the fire of their Infantry.

It is moreover very seldom that we find them occupying the houses included in a defensive position. They certainly post a few good shots in them, with orders to pick off from the windows the superior officers of the enemy, but the main body of the defenders is concentrated in the outskirts of villages, in gardens or behind hedges and enclosures, with some companies in column on the flanks and a reserve in the centre of the position, and as much as possible together, if a sufficiently large space can be found. This plan appears preferable to the Austrian one, which consists in sheltering the defenders inside buildings, where they are crowded together and removed from the superintendence and control of

their officers, and consequently in case of a reverse are usually surrounded and made prisoners: more than one instance of this was furnished by our own experience in 1859.

Bohemia, being a country covered with forest, a war in that locality necessarily gives rise to a great deal of fighting amongst the wood, and of all actions of this sort the most remarkable was certainly that which took place on the day of Sadowa in the wood of Maslowed. The Prussian Infantry fought gallantly on that occasion. The Division Franscky with 14 Battalions withstood for 8 hours the attack of 51 Austrian Battalions and 128 guns, finding work all this time in the wood for nearly three Austrian 'corps d'armee,' and it was thus in a great measure the cause of Chlum being unoccupied by the enemy and of its subsequent easy capture by the guard.

The Prussians allege that the needle gun was not of much use to them on this occasion, their men were too closely pressed by the enemy and too out of breath by the constant ebb and flow of the fight to derive much advantage from it.

The Prussians entered the wood in company columns, but before long the numerous accidents of ground and the perpetually recurring fluctuations of the fight put an end to all tactical formation, and the action was carried on amidst the greatest confusion and without any distinction between regiments, battalions or companies.

It became indeed less a combat in line than an action of skirmishers in large bodies, as every engagement in a wood must necessarily become; but even under these circumstances the careful action of the Prussians was manifest, notwithstanding the difficulties of the situation in their management of small reserves. Whenever a detachment was so roughly handled as no longer to be capable of effective resistance, it was at once withdrawn out of fire, and rallied with other fractions similarly situated under cover, and without delay, so as to be again in a condition to enter the wood and to support other detachments which might be repulsed, or in case a fresh effort was deemed necessary.

#### *Company Columns.*

It is more especially when studying the company column that we are able to describe the contrast which exists between principles and their mode of application.

Every command, small or great, has, in the eyes of Prussians, a great moral importance; and the person exercising such command is much more ready to exaggerate than to depreciate its importance, considering it his first duty to make himself equal to his position.

Moreover the sentiments of class and of military subordination are those of the whole nation, and serve to increase the 'prestige' of command; then the traditions of Frederick the Great are always before their eyes, and every Prussian officer aspires to prove himself the worthy

heir of such a glorious past ; and finally they have been forcibly impressed by the remarkable feats of arms which the "*individual initiative*," so common among the French, has often given rise to in our African, Crimean, and Italian campaigns.

The important results gained on more occasions than one by comparatively small means, have not escaped the notice of the chiefs of the Prussian army. They have seen in them a new confirmation of the truth, that in war, audacity and opportunity have often the advantage over numbers, and they have neglected no means of impressing this truth upon their officers. These latter appear to have perfectly understood it, and during the whole of this campaign have exhibited great resolution and boundless self reliance.

It was from considerations of this sort, that in Prussia the company became established at the unusual strength of 250 men (on a war footing,) and the same ideas originated the company columns first tried in 1843, and finally introduced in the regulations of 1847.

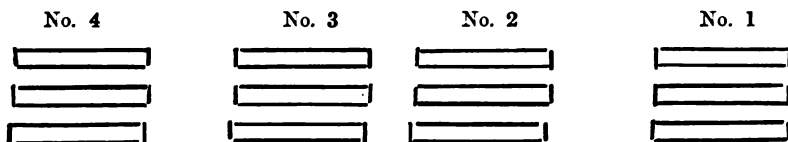
The Prussian battalion is composed of four companies, each of the latter consisting of two sub-divisions (pelotons.) The company therefore represents the quarter of the battalion, and corresponds to the division formed of two 'Pelotons' in the French battalion. The men of the entire battalion are formed in three ranks, the third rank being for skirmishing only.

In order to form company columns, each company forms column of sub-divisions in the following manner:—

Nos. 1 and 2 companies in rear of their left sub-divisions, and Nos. 3 and 4 in rear of their right sub-divisions. The third rank of the two sub-divisions of each company fall together, and form a third sub-division in rear of their own company.

Thus the whole of the sub-divisions are formed in two ranks, and the battalion stands in the order indicated below, that is to say, in the centre two companies together, forming a double column, and on each flank one company in column of sub-divisions.

The interval between the centre and flank columns varies according to the necessity of the moment, but generally not more than 80 to 100 paces, and those intervals are taken up on the march.



Sometimes when it is intended to form a battalion in echelon order, the companies each form column on their right or left sub-divisions,

but the latter formation is less usual than the former, which is the order of battle.

The company column is not only a formation for purposes of drill, but it gives rise to a regular system of tactics of a perfectly distinct character, and of which the fundamental principle is this, that a company of 250 Prussians commanded by a Prussian Captain, ought to produce an effect equivalent to that of an entire battalion of any other army.

This argument, however patriotic it may be certainly open to discussion in every other point of view, and it is no reason, because events in the last campaign have often confirmed it, that it should be regarded as an established point for the future.

The Prussians then have actually two tactical units, the battalion which is always the unit in principle, and the company which has become so as a matter of fact. It follows from this, that they have entrusted their Captains very large discretionary power and independence. The latter, accepting the responsibility along with the authority, have invariably acted in conformity with the general object, without awaiting or requiring any orders from their immediate superiors, so that the action of the latter, such as Colonels and 'Chefs de Battalion,' is entirely dispensed with in the majority of instances. In other words, in the Prussian army the action has been individualised by making the smallest unit of force its motive power.

What then is the aspect which the field of battle generally presents? "Many partial attacks executed by battalions, half battalions, or companies, either isolated or grouped two or two. Little apparent connection between these movements in point of time or distance, and seldom a manœuvre of more than two battalions. Such it appears to us is the general character of these actions on the part of the Prussians; when their plan of attack is more clearly developed, it depends for the most part in the formation of several divergent columns, isolated from each other, setting out from long distance and marching directly on different points of the enemy's position without any previous concentration whatever."

We have copied the above passage from an article by Colonel Terri-Pasani (*Moniteur de l'Armée* du 21 September 1868), because it sums up the impressions produced on all of us by the course of the Prussian operations as detailed in the official accounts. We will merely remark that the employment of entire battalions is even rarer than Colonel Terri-Pasani would indicate, for it is in reality quite the exception. The demi battalion was certainly employed occasionally, especially in the 5th Corps, but the sub-division which perpetually comes into notice, is the company: and even on some occasions the section, (zug) one-third of the company, as we shall see in the chapter on skirmishers.

However dangerous this mode of fighting may become in many cases, yet it is cried up by the Prussians to excess. And they repose im-



PLICIT confidence in the company columns which are a necessary consequence of it.

Company columns according to them are wonderfully adapted to the system of modern warfare, which for the most part is carried on around positions where a battalion is obliged to be broken up, and thus to be placed beyond the control of its commander, whilst companies of 200 or 250 men are more mobile, and at the same time quite strong enough to perform any given task.

They possess at the same time the advantages both of the column and of the line. They can, by increasing at will their intervals, shew a larger front than the latter, and they can deploy rapidly, since the deployment takes place on four companies simultaneously. They offer a smaller mark to Artillery than a battalion in close column and each can rapidly form square. They can adapt themselves to ground of every sort, and each has its skirmishers in readiness without disorganizing the battalion. Finally they are well adapted for sending out detachments for isolated action and for the formation of small reserves. (*Course de Tactique a l'usage des Militaires en Prusse.*)

It will be seen that the enumeration of the qualities attributed to this formation is a long one, and yet we have only made mention of the principal ones. We consider that our own columns of battalions at deploying intervals, recommended quite recently, possess certainly the greater part of its advantages without the grave defect of a fractional division carried to excess.

But in Prussian estimation the company columns are the latest expression of Modern Tactics. They maintain that the power of being able to resolve a battle into a series of small, local and partial combats, gives them a real superiority, and that to it they owe in a great measure their successes. They add:—"These tactics require a previous scientific education, general as well as military, which renders the Officer familiar with the great operations of war, and as a necessary consequence gives him the habit of prompt and rapid decision: our company leaders are habitually practised in taking part in the plans of their commanders even without orders when once they arrive on the field of battle. A close and intersected country is not considered an unfavourable one by us; on the contrary, we prefer such ground, and we never fight with Infantry in the open, if we can avoid doing so. This gives rise to local actions which suit exactly our perpendicular formation."

"These perpendicular tactics and the system of local combats do not necessarily require a force to be broken up into company columns, and it must be admitted that in certain unfavorable circumstances, or when there are no available reserves, this fractional formation may be attended with very unfavorable results. But it has become a necessary condition of our tactical customs and we have generally found it an-

"swer our purpose." (*Article on Journal Militaire de Berlin, Reponse a M. le Colonel F. Pisani, November 1868.*)

It will be seen that the author of the above article, however great a partisan he may be of the fractional formation, cannot nevertheless conceal from himself that the system has its defects, and no doubt General Steinmetz, one of the best of the Prussians Generals, has arrived at the same conclusion, for in the 5th Corps under his orders, they always fought in half battalions and not in company column, and the actions of Nachod, Skaletz, and Schweinschaedel were not less successful on that account.

There can be no doubt that the battalion 1,000 strong is too unwieldy to be easily handled as a single body, and one can therefore understand the advantage of the half battalion as a middle course; but then it has the defect of leaving the Colonel with only half his command, and of handing over a half battalion to an officer of inferior rank. This plan therefore, can hardly become an established principle.

We have already spoken of offensive marches executed by lines of entire battalions, and which were attended with the most brilliant results; but cases of this sort are very rare; in fact partial combats have every where been the rule, each company, except in the 5th Corps, fighting its own battle, but at the same time "all keeping the general tactical object in view, without awaiting orders from a superior," as the Prussians remark with much complacency.

The following is what we read on this subject in a very interesting work published at Berlin (the author be it remembered is speaking of the Prussian Army only):—

"In examining the actions of 1866, in order, if possible, to draw some general inferences from them, we are at once struck with a feature which is common to all. The extraordinary development of front at the expense of depth. Either the force is drawn up in a single long and slender line, or it is broken up into isolated portions, each of which fights on its own account. Everywhere the tendency is shewn to extend its wings in order to envelop the enemy. It is no longer a question of preserving the original order of battle: the various fractions of the force get mixed up either by their own choice or by the chances of the fight; sometimes even before the action has commenced the detachments and grand divisions of 'Corps d'Armee' are formed in the most diverse manner and on the most heterogeneous principles; the action is sustained almost exclusively by company columns, rarely by half battalions. The tactics of these company columns consist in throwing forward swarms of skirmishers, by degrees the supports allow themselves to be drawn into the action and deploy. Here then we see the first line broken up, and presenting the appearance of a horde of Irregular Cavalry.

"The second line, which had at first continued in close order, endeavours in its turn to get up with the front line, at first with a desire to join in the action and afterwards because the men find the bullets and

“shells aimed at the front line falling among them. They suffer all the more from this fire on account of being in close order, and endure it the less patiently since they do not experience the feverish excitement of close fighting which causes danger to be entirely forgotten. The mass of companies then, composing the second line forces an entry into the first, and since it is usually on the flanks that most clear space is found, they crowd up for the most part in these directions.

“Very often the reserve itself participates in the excitement until occasionally but a small portion of it remains, too weak to fulfil the object of a reserve.

“In point of fact, the entire action on the part of the first two lines is nothing but a series of combats carried on by a certain number of commanders of companies, against that portion of the enemy which happens to be in their front.

“The superior officers can no longer follow on horseback all these small parties, who push themselves forward independent of difficulties of ground. They are obliged to dismount and to follow on foot the first company of their regiment or battalion they may meet, since their own command has escaped from their control.

“They take command of the company in order that they may at least have something to do, and it is not always the better commanded for that reason. Even General Officers are sometimes placed in a similar position.”

It would appear that matters must in reality have occurred as above described, for the Prussian officer, author of the work from which we have quoted the above lines (*Taktische Ruckblicke* 1866) himself took part in the campaign of 1866, and while far from disapproving of company columns, yet he has been forced to admit, without reflecting upon the tendency of the natural tactics, that there are at least two defective points in connexion with them, namely, that the officer in command loses all control over the line of battle, and that the reserves are swallowed up by the spontaneous action of their component parts. He does not attempt to conceal that herein lies a very serious danger, and that if an enemy were to concentrate his forces and throw himself suddenly on such a weak point of the line of battle, he would have many chances in his favor and but little difficulty in dispersing all these fractions fighting separately without connection. He even cites Langensalza and Trautenau as proofs in support of his argument.

---

### *Skirmishing.*

The Prussian instructions on skirmishing are very brief: strictly speaking they contain no fixed rules, and the theory of the movements is only indicated in a very general manner: on the other hand they lay great stress on the strict observation of principles necessary in war. On

taking advantage of accidents of ground ; the proper use of arms ; the mutual support of each other on the part of the skirmisher, and the most careful attention to words of command.

Intervals between skirmishers are never indicated by command, in principle they ought not to exceed 6 paces, but are entirely dependent upon the nature of the ground.

Extensions are not made in a general or indeterminate manner, but invariably by groups, that is to say, by fractions of at least 12 men, under the orders of an under officer (the rank of Corporal does not exist in the Prussian Army.) Even when the whole company is extended, each under officer retains command of his own part of the line. Intervals are always preserved between each group in order that they may be readily distinguished from each other.

It will be seen that this is very much like the system of extension by squads at present on trial by the French Infantry.

As with us, the Prussian skirmishers lie down whenever the ground offers no cover, but we have nowhere seen Infantry at close order adopt this disposition which has latterly found favor with us. If suddenly charged by Cavalry they form around their supports or among themselves little compact though irregular groups, called *Knoenel*. Although about 4 o'clock on the afternoon of the battle of Sadowa, the skirmishers of the twelve divisions no longer took the trouble to collect themselves into *Knoenel*, but repulsed by their fire in extended order the charges of the Austrian foragers.

The instructions above referred to, attach great importance to firing; men are told not to fire until they have a moral certainty of striking the object aimed at, and consequently they never fire on a single enemy at more than 200 paces nor at an hostile body at more than 500 paces. They are taught when opposed to a line of skirmishers to aim at the officers and buglers, in the case of a battery in position at the gunners, or if in motion at the horses, &c.

In studying the details of battles in the late war, it must be admitted that in general the Prussian skirmishers have practised these rules with much success ; thus, towards the end of the battle of Sadowa, ten Austrian guns fell into the hands of the Prussians, near Lipa, on account of their horses having been killed at long ranges for the most part by a single section of skirmishers belonging to the Fusiliers of the Guard. We only mention this one instance, although they are furnished in abundance by the official accounts, in which it is shewn that out of 113 guns captured from the Austrians during the battle, 108 were taken by Infantry, and nearly all of them by swarms of skirmishers.

Their mode of action was always the same ; placing themselves in ambush they shot down gunners and horses at long range, and then charged the guns with the bayonet. The batteries generally abandoned

by their guard of Infantry, and having lost three-fourths of their horses, in most cases fell an easy prey to their assailants. Their tactics also stood them in good stead, especially at Sadowa, where the Austrian Artillery was as numerous as it was well served, and where it caused the Prussians very serious loss. At the same time however it must in justice be added, that the temerity of the Prussians was greatly favored by the heroic devotion of the Austrian Artillerymen, who in order to protect the retreat, fired grape up to the last moment at 50 paces on the enemy's column. The official accounts mention a number of other occasions on which the skirmishers performed good service: many Lieutenants when in command of sections in extended order gave proof of great capacity for taking the initiative, and often made the most daring and successful attacks. In the action of Kissingen, for instance, three sections of skirmishers of the 15th Regiment, cut off from their Corps, and meeting by chance on the Stationsberg, succeeded in maintaining their position for more than an hour against three Bavarian Battalions, whom they forced to retire by a clever feint against their left flank, from which the Bavarians thought they were supported by a considerable force. But we need not multiply instances of this sort, but refer our readers to the study of the campaign where cases of this nature were of very frequent occurrence.

In short, the Prussian army availed itself largely of skirmishers and generally with marked advantage: the latter according to circumstances acted with prudence or audacity, sheltering themselves with much skill by the inequalities of ground and attacking with vigour when circumstances required it. Their fire also caused serious loss to their adversaries. This part of instruction in carried out very carefully in Prussia, and with great reason, for it must be admitted that the fruits of their efforts in this direction were plentifully reaped on the battle field.

#### *Squares.*

The question of Infantry squares has been the subject of controversies without number, although not more in the campaign of 1866 than in preceding ones, and according to our view of the case it has not yet been definitively settled. Each of the three belligerent armies, Prussian, Austrian and Bavarian, possessed a numerous Cavalry, and there were frequent encounters either of horsemen with each other, or between the former and Infantry, in small bodies it is true, rather than in large masses, but generally sustained with much vigour.

To meet these attacks we see the Infantry adopting all kinds of formations from Langensalza, where the Prussians received the charge of the Hanoverians, to Rokeinitz, where the Austrians formed the last square of the campaign. On many of these occasions the squares remained intact and sometimes they were broken, but in truth the result were so various, that it is impossible to draw any inference from them.

As far as the Prussian army is concerned, the fact is incontestable that except at Langensalza, where Colonel des Barres rallied men of va-

rious corps into a compact column facing outward, we do not find in the Prussian account a single instance of a regular square having been formed.

This account bears undoubted signs of truthfulness ; it enters into the minutest details of the smallest combats, and yet we find it always representing the Prussian Infantry as receiving in line the attacks of the enemy's Cavalry.

We will confine ourselves to two instances only. At Gitschin, at the very commencement of the campaign, a battalion in column was charged in rear by six squadrons of the division Edelsheim, a case exactly suited for the formation in square, yet nothing of the sort was attempted. The rear sub-division faced about, the one next to it wheeled about, and on the prolongation of line of a sub-division, the skirmishing ranks formed up rapidly the continuous line without intervals, and thus formed repulsed by independent firing the charge of the Austrian Cavalry in echelon, inflicting upon it a loss of 50 men and a great number of horses.

At Sadowa after the capture of Chlum, four companies belonging to different regiments of the guard, brought together for the moment by the chances of the fight, formed in line to receive the charge of a brigade of Austrian Curassiers, and opened fire at 200 paces with such precision that the Curassiers went about and never appeared again, leaving 200 of their men on the ground.

The Prussian square is formed by closing up the sub-divisions in column, and it is therefore an almost solid mass, in which only one quarter of the men can fire, it is not therefore to be wondered at, that they made so little use of it. Too well advised to paralyse in such a manner their Infantry fire on which they depend so much, the line formation was always preferred, inasmuch as it gave free developement to the play of their arms.

We think that their example is a good one to follow, and that in future, except under exceptional circumstances, a body of Infantry armed with breech-loaders, will always have sufficient self reliance to receive in line the charge of Cavalry, and that it will have much more prospect of repelling it than adopting a formation so complicated as a square, which is not only exposed more than any other formation to Artillery, but which neutralises three quarters of the available fire.

#### *Conclusion.*

The Prussian Infantry fights almost exclusively in company columns, it adopts the offensive as often as possible; acting against the enemy's wings rather than against the front of his position.

Their attacks are in most instances partial, and therefore deprived of connection with each other and general direction, but they make up for these disadvantages by great vigour in their execution.

On the defensive the Prussian Infantry receives the enemy's attack in line, allowing him to approach within 3 or 400 paces and then firing volleys by word of command. Independent firing is reserved for extreme cases. It does not, as a rule, form squares, but meets Cavalry charges in line with volleys or independent firing reserved to the latest possible moment.

In a word, the tactical procedure of the Prussian Infantry is characterized by two principal features, breaking up the action into a series of small combats, and attention to the effect of fire; the latter it has brought to great perfection, but the former which is its great peculiarity, reposes, according to our idea, on a false foundation. If indeed it uses the individual initiative in a manner which is sometimes crowned with success, yet more frequently this can only be done at the expense of unity of action. In this there is unquestionably a defect that an adversary who knows how to hold his force well in hand, would not fail to profit by. Some among the Prussians, seem to understand this, but the majority seem to be infatuated in favor of a system to which they attribute in a great measure their success. From this there results a great exaggeration of the use of company columns, which, notwithstanding some partial advantages, must introduce looseness into the line, and therefore disorder.

The French order of Battle, founded on the battalion as the tactical unit, is in our opinion the preferable one, for it is admirably adapted to all the combinations of the field of Battle in manœuvring, as well as for attack or defence, with great mobility, equally suited for deploying or reforming column, one battalion can always and everywhere be kept well in hand by its commander, and this is a condition without which there can be no lasting or complete success.

Struck by the wonderful results obtained by our troops in the rude shocks of the Italian, Crimean and Algerian wars, which carried so far and wide the reputation of our army, Prussia has sought to give to its army, that mobility, individual initiative, and audacity, which have at all times been the peculiar characteristics of the French troops. We cannot admit that it has passed us by in this work of imitation, but along with these qualities which are peculiarly our own, we can and ought to look more and more to the improvement of our fire in order to profit as far as possible by the quality of our new fire arm which is at present incontestably the best weapon of war in Europe, and to develop in our regiments that coolness and solidity in the ranks which are so necessary to complete the natural qualities of the French Soldier.





## NOTES.

**On the sale of Spirits in Regimental Canteens.**

At home, spirits are not sold in regimental canteens. In India they are. At home the soldiers in order to get spirits must dress himself, and walk at least half a mile, on the average, to get the dram. In India it is brought to him; he can get it without the trouble of going out of barracks, and without the trouble of dressing himself. To sum up all in a few words, in India he can learn to drink spirits, and may in due time become a confirmed dram-drinker, without trouble to himself. At home this undue facility is not thrust on him.

Now, what effect has this difference in facility on the soldier? At home the soldier may occasionally go and have a carouse, and perhaps may come back drunk; but I do not think that under the home system, soldiers, certainly not the recruits, will learn to be habitual spirit-drinkers; whilst under the India system they are led to it, they are taught it by the undue facility given them. I will quote my own experience on this point. When the regiment, to which I belong, came to India a year and a half ago, the average number of drams of spirits sold in the canteen daily was under 23. It has now increased to 200 per day, and in another year or two the number will, I fear, under this vicious system have increased to 400.

When the soldier has once acquired a craving for spirits, I do not suppose that he will stop, after a time at least, at one dram. After a time he will get what he can in the canteen, and go elsewhere for the remainder. But why teach the soldier to drink spirits? It is pretty certain, that if at the commencement of our service in India, there were not more than 20 men, who cared enough about spirits to go to the canteen for them, there must have been still fewer, who would have taken the trouble to dress and walk into the bazaar to get them.

None, but those who know the English soldier well, can realize the great influences, which a little trouble, such as dressing and walking half a mile,—or conversely, the great effect which facility and proximity has on his habits. I have seen a cricket ground, not more than half a mile distant from the barracks, hired for the use of the men. Most days nobody used it. Occasionally a match would be played. On the other hand, whenever the cricket ground is within the barrack walls, it is always largely used every afternoon.

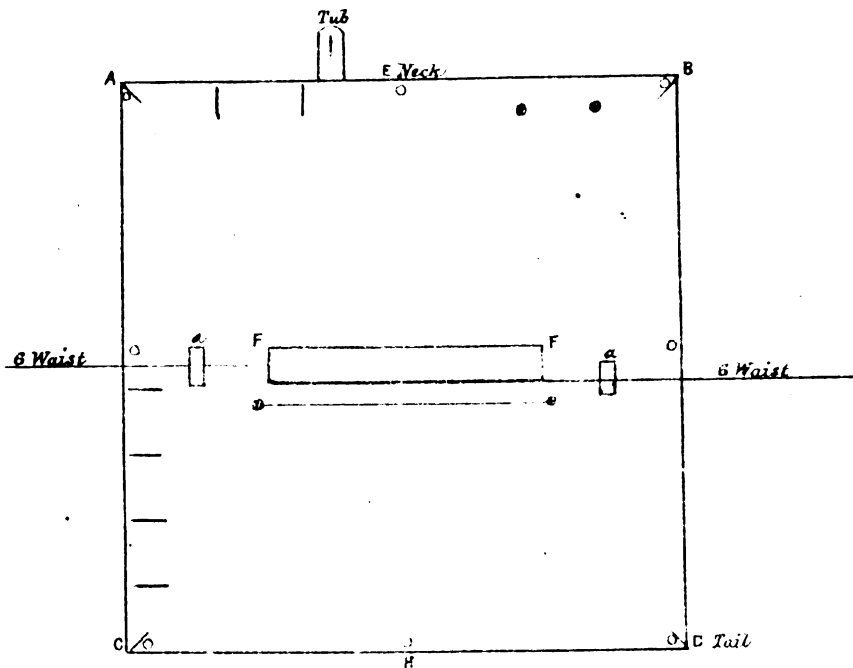
Any violent change in the present canteen system would probably be injudicious. In regiments which have been long in India, I would make no change; but in those, which have not been more than three years in the country, and certainly as regards future arrivals, I think a change might be carried out without difficulty and with great advantage to the best interests of the soldier.

I am not in favor of the absolute suppression of the sale of spirituous liquors in the bazaar. That trade should be left open, as it is in our

towns at home, as regards the soldier. Some *moderate* amount of temptation, as distinguished from undue facility, is good for men. Unless men are *habitually* subjected to a moderate amount of temptation, they cannot be depended on in time of great temptation.

The illegal sale of spirits in barracks may perhaps be feared, as a result of the abolition of the sale in canteens. Probably this might be the case in regiments, which have got habituated to the daily dram. But, as stated above, I do not advocate any change as regards those regiments. In other regiments the evil need not be feared. They at least are not accustomed to the sale of spirits in canteens. No difficulty has ever been found in stopping the illicit sale of spirits in barracks at home, and no greater difficulty need be feared in India.

F.

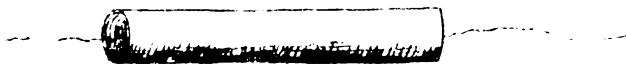


Coat outside.

o o Eye-holes for tent cord.

• Button.

3 feet.

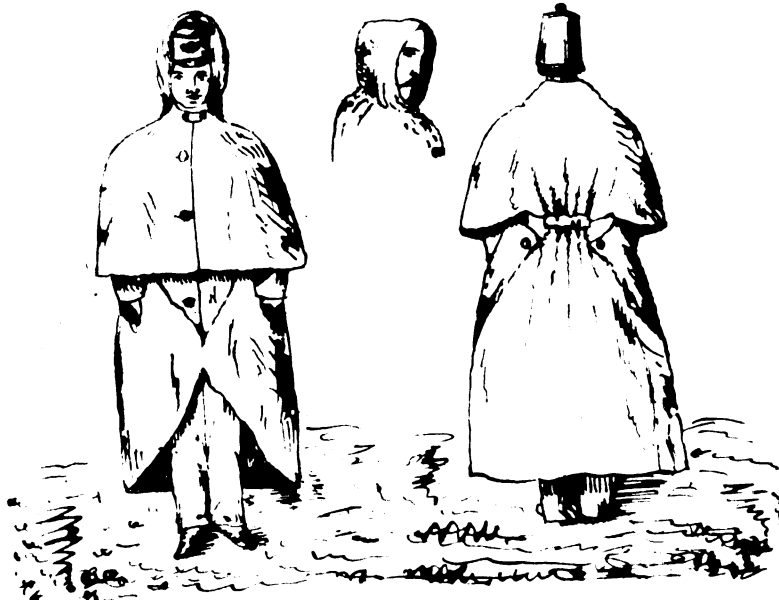


Rolled up.



HALF ON.

ON.



WITH HOOD.

BACK.

## INVENTIONS.

*Pattern of a Light Waterproof Cloak suitable for Troops Campaigning in wet weather ; capable of being used as Waterproof sheeting and convertable into a 'tente d'abri.'*

I beg to forward the pattern of a cloak in my possession which is admirably adapted for troops campaigning or making forced marches in wet weather. It can be used as a waterproof sheet, and with three sticks can be easily converted into a tente d'abri. It is made of strong linen cloth which can be dyed any colour, and waterproofed with a composition called Xylonite, which is not affected by the heat in any way.

The weight of my cloak is 2lbs. and the cost about £1-1s.

It is simply a square sheet 6 ft. by 6 ft., and the cloak is improved by the mode of fastening.

To put on the cloak, take hold of the cords GG and gather the cloth together at FF; put the gathers to the back and tie it round the waist and button down the front. Take up the remaining part by AB and pass over the shoulders, letting the neck come in the centre at E; button the tab to the button provided and the other buttons at B which form the front cape. The part E can also if desired be passed over the helmet, and form a hood fastened under the chin. The corners C and D. can also be buttoned back to give more freedom to the legs in marching.

To fold up, withdraw the cord from the tops AA. Bring AB and CD together at E and H. Fold AB to CD and roll round cord.

T. BELL, Major,  
30th N. I. Jacob's Rifles.



## CORRESPONDENCE.

*To the Editor Journal of the United Service Institution of India.*

SIR,

I read with interest the correspondence published in the Journal of the Institution on the subject of the Staff College; it is a point on which I have always considered that the officers of the Indian Army might be granted greater advantages.

The only conditions under which an Indian officer can enter the College are:—payment of passage home and back, forfeiture of appointment, forfeiture of service, and conversion of well-earned recreation into hard study. They are sufficient to shut the doors of the College, to all of us, most effectually.

Many of the questions offered to Government for the alteration of the existing system are impracticable, when looked at from a state point of view, either from the expenditure they involve or from being contrary to precedent and rule—neither of which are required. All that is necessary is, for Government to look upon the officers of the two services as individuals with like feelings and like desires, and to make the rules that are applicable to the one applicable also to the other.

An officer of a British regiment serving in India, on passing the entrance examination, receives a free passage home, suffers no loss of service when there, draws *English* (not "*out-of-India*") rate of pay, and rejoins his regiment ultimately at the expense of the State. Now, can there be any objection against offering the same terms to officers of the Indian Army? None, surely, on the score of expense, for the forfeited Indian allowances would over and above cover all cost of passages. Nor, on the score of precedent, for officers on duty in England are at times allowed to count the time passed there as service.

I do not think the Government can be asked to do more than offer the above terms, for though the State may gain by the extra training of a few officers, the officers themselves will gain very much more; and if it is worth the while of British officers to study for the Staff College under them, it would be equally worth the while of Indian officers to do likewise. Certainly I, for one, would study for the next examination under such circumstances.

The above advantages should, I consider, be conceded; but as a protection to the Government, it should further be ruled, that an officer who failed to pass the final examination, or who was removed from the College for any cause for which he could be held answerable, would not only forfeit his return passage but also his service for the time he was at home.

ARTHUR CROOKSHANK, *Captain,*

*Bengal Staff Corps.*

## II.

SIR,

A plan for carrying spare ammunition on service very similar to that proposed in No. 2 of the Proceedings of the United Service Institution of India, by Colonel Osborne, 6th Royal Regiment, exists at present in the Punjab Frontier Force.

It is found to work well practically, and therefore I am induced to give you an outline of it for the benefit of those members of the Institution, who may not be aware of its existence, and with a view to its adoption, for regiments armed with a breech-loader, being considered.

Four mule boxes per company are kept in every regimental magazine ready for instant service.

Each box is divided into three compartments, each compartment containing a leather cartouche, fastening with a brass button, and having a strap of leather, about two inches broad, and long enough to pass over a man's shoulder, encircling it.

Each cartouche contains 270 rounds of ammunition with the proper complement of caps.

Each box contains 810 rounds, and therefore each company has an immediate reserve of 3,240 rounds.

A mule carries two boxes and can go over nearly any ground; on arriving at places where mules cannot proceed, the cartouches are taken out of the boxes and carried by hand.

The boxes are carried in 'suleetas' for the Punjab pad, or in straps for the pack saddle lately introduced into the Punjab Force, and which I may briefly describe as somewhat resembling the Otago, which is not very universally known, and was commented on by Colonel MacGregor in the first issue of your Proceedings.

Boxes fitted with brass rings and chains, with hooks for fastening over the saddle, would no doubt be an improvement, as doing away with the loss of time taken up in unfastening a suleeta, or straps.

Apparently there would be no difficulty in following this plan with all regiments in India; in the plains four boxes would form an easy load for a camel, and for a campaign in the hills, mules could be attached to each regiment in the number required.

If the amount of reserve ammunition thus secured is not sufficient for troops armed with a breech loader, a larger number of boxes could be attached as deemed necessary.

I am, &amp;c.,

ALFRED GASELEE, *Lieutenant,**4th Regiment P.*



## NOTICES.

- 1.—It is earnestly requested that members of the Institution, who have not already paid their donation and subscription for 1871, will do so at their early convenience. Officers, who may wish to become members, are requested to be kind enough to forward their donations and subscriptions at the same time as they express a wish to join the Institution.
- 2.—Members, changing their residence, are requested to give early intimation of the same to the Secretary at Simla, and also to the Corresponding Members (if any) of the Station they are leaving and going to.
- 3.—Members, going to England, are requested to give an address in India where their Journal may be sent, and to note that their subscription is due on the 1st May in each year.
- 4.—Members are invited to become Corresponding Members at the different Stations. The duties of this office will be to collect subscription, forward papers, arrange about lectures and debates, and to communicate on general matters with the Council.
- 5.—The attention of those, who intend to contribute to the Journal, is called to the Rules on this subject.
- 6.—Members, who may be willing to give their services for the translation of papers on Military subjects from foreign languages, are requested to communicate with the Secretary naming the language which they offer to translate.
- 7.—The attention of those, who are working out inventions of Military importance, is called to the opportunity afforded, by the Journal of the Institution, of making their ideas known. All inventions, forwarded for publication, will be carefully illustrated and described.

The following is published for general information :—

---

### Revised Regulations of the United Service Institution of India.

- I.—The Institution shall be named "The United Service Institution of India."
- II.—The design of the Institution shall be the promotion of Naval and Military Art Science and Literature.
- III.—The proceedings of the Institution will embrace—
  1. The delivery of lectures at any station in India.
  2. Debates on Military subjects at any station in India.
  3. The publication of a journal, as often as practicable, containing (when procurable) matters arranged in the following order :—
    - (a) Original papers on Military subjects which the author is unable or unwilling to deliver in the form of a lecture.
    - (b) Reports of lectures with the discussions thereon.
    - (c) Reports of debates with the discussions thereon.
    - (d) Opinions of members on matters published in former numbers.
    - (e) Selections from the records of the Military Departments of India (by authority).

- (f) Translations from foreign works of Military interest selected by the Council or sent by members.
- (g) Short notes on professional subjects.
- (h) Notices of inventions of Military importance.
- (i) Correspondence on professional subjects.

#### IV.—Composition—

1. The following shall be solicited to be Patron and Vice-Patrons respectively *ex-officio* :—

##### PATRON :

His Excellency the Viceroy and Governor General of India.

##### VICE-PATRONS :

His Excellency the Commander-in-Chief in India.

|   |   |                                   |
|---|---|-----------------------------------|
| " | " | of Madras.                        |
| " | " | of Bombay.                        |
| " | " | Royal Navy on the Indian Station. |

2. Besides the above, Vice-Patrons shall be limited to members of the Royal Family, Officers distinguished for their services, and Members who have been benefactors to the Institution.
  3. All Officers of the Royal Navy and Army and of Volunteer Corps in India shall be entitled to become members on payment of the entrance fee and annual subscription.
  4. Gentlemen, not included above, may become members on the recommendation of two members of the Institution, and with the approval of the Council.
- V.—1. The Government of the Institution shall be vested in a Council at the Head-Quarters of the Army in India, to consist of not less than 12 members or more than 24, to be, as generally as possible, representative of all branches of the Forces in India. The names of Officers, willing to serve on the Council for each ensuing year, shall be published at least one month before the election, and all members of the Institution, unable to attend, may record their votes for the Council by proxy.
2. One half of the members of the Council shall go out annually by rotation, but all shall be eligible for re-election. Vacancies, occurring otherwise than by rotation, to be filled up provisionally by the Council.
  3. Four members of the Council will form a quorum, and the senior member will *pre-*sideside.
  4. Officers will be invited to become Corresponding members, to forward the objects of the Institution, and to communicate with the Council.
  5. A Secretary shall be elected by the Council at the Head-Quarters of the Army in India for the purpose of (under the orders of the Council) keeping the accounts, editing the journal, and conducting correspondence, &c.
  6. The duties of the Council shall be to exercise a general control over the welfare and expenditure of the Institution, and to pass papers for publication.
  7. The Council shall frame such bye-laws, for the general conduct of the Institution, as may appear to them necessary, subject to confirmation by members of the Institution at the next General Meeting.
  8. The accounts of the Institution shall be circulated annually for general information.
  9. Non-commissioned Officers and Soldiers of the Army and Volunteer Corps shall, when practicable, be permitted to attend meetings or to hear lectures, &c., and the introduction of a member shall be sufficient to admit non-subscribers for the same purpose.

10. Secretaries of Sergeant's Messes and of Regimental Libraries and Reading Rooms can obtain the Journal of the Institution by paying in advance the amount of the annual subscription for each copy required.

VI.—An entrance fee of Rupees 5 shall be paid by members on joining, and an annual subscription of Rupees 5 shall be paid in advance by the 1st of May each year.

By order of the Council,

ARTHUR CROOKSHANK, CAPT.,

*Acting Honorary Secretary.*

---

## BYE-LAWS.

---

### Rules for Contributors to the Journal of the United Service Institution of India.

1. All papers must be written in a clear, legible hand, and only on one side of the paper. All plans must have a scale on them.
2. Contributors may write anonymously, if they prefer to do so.
3. Unless the author expressly states at the end of his paper that he wishes it published complete or not at all, the Council will make such alterations in it as they deem necessary.
4. The Council do not undertake to authorise the publication of such papers as are passed, in the order which they may have been received.
5. Papers will be published, if passed, by any four of the Council.
6. Contributors will be supplied with a few copies of their papers, provided they apply for the same before it is in the Press.
7. Contributors are requested, in future, to append a 'non de plume' to their papers, in order that they may be communicated with in the "Answer to Contributors."

---

### Rules for the Regulation of Meetings and Debates of the United Service Institution of India.

1. The subject of all lectures and debates must be submitted for the sanction of at least four Members of the Council before they are held.
2. The Senior Members present, being an Officer of the Navy or Army, shall always officiate as Chairman at Meetings.
3. Speakers are requested to address their remarks to the Chairman, and not to the Meeting.
4. In the event of more than one member rising to speak at the same time, the Chairman's decision as to who shall be heard first shall be final.
5. If called upon to do so by the Chairman, a speaker shall at once sit down.
6. No remarks of a personal nature, or in any way subversive of discipline or harmony, will be permitted.
7. Speakers are requested to arrange for notes of their own speeches being taken.
8. No interruptions will be permitted during the reading of a paper, or the speech of another member.

9. Meetings shall be broken up or adjourned only on the general vote of the members present.

10. Non-Commissioned Officers and Soldiers of the Army, and Volunteer Corps shall, whenever practicable, be permitted to attend meetings, to hear a lecture, and the introduction of a member shall be sufficient to admit non-subscribers for the same purpose.

By order of the Council,

ARTHUR CROOKSHANK, CAPT.,

*Acting Honorary Secretary.*

---

## LIST OF SUBJECTS ON WHICH PAPERS ARE DESIRED.

On the organisation of a Transport Department for the Army in India.

On the organisation of an Intelligence Department for the Army in India.

On Military Telegraphy and Signalling adapted for service in India.

On the organisation of the Native Army of India.

On the organisation of the Staff Departments, Civil and Military, for War.

On the uses to which Troops, British and Native, can be put to, in aid of Government works.

On the organisation of Pioneer Companies in Infantry Regiments, and the more careful instruction of this branch in field works, &c.

On the future of Cavalry, as drawn from the teaching of the last three great wars.

On the distribution of the Army in India strategically considered.

On the defence of our N.-W. Frontier.

On the defence of our N.-E. Frontier.

On the Sanitary Condition of the Army in India, British and Indian.

On the defence of the Ports and Coasts of India.

Is the system of Military justice of our Army (British and Native) capable of improvement?

Cannot the system of pay of the Army, (British and Native) in India, be simplified and improved?

Can Army correspondence be reduced with advantage?

On the practical education of Officers generally, especially of Staff Officers.

Notes on the lessons taught by warfare in India, or against undisciplined enemies.

Reviews of Indian Campaigns with the lessons deducible therefrom.

On the conduct of operations among Mountains.

On the arming of the Native Army.

On the danger to, and aid derivable from India, in the event of a war with France, Russia, Prussia, or America.

Records of the History of Native Regiments, and of the services of British Regiments, in India.

Memories of distinguished Native Soldiers.

**Memoirs of distinguished Officers who have served in India.**

On the possibility and advantage of including a large number of our time-expired British Soldiers to settle in India.

On the advantages to be derived from a system of appointing our Soldiers, European and Native, to the numerous posts under Governments from which they are now debarred.

On the aid which might be derived in the event of rebellion in India from the organisation of all British and Eurasian subjects as fighting men.

On the Military training of our Native Regiments.

On the organisation of Native Regiments officered entirely by Natives.

Plans of operations of Campaigns, in which the Army of India might be engaged, whether within or beyond our frontier.

On the amalgamation of the various Staff Departments of the Army and their subordination to one Chief of the Staff.

The improvement of the Pension Rules of the Native Army, the discharge of Native Soldiers after a fixed period of service, and the abolition of Annual Invaliding Committees.

On the results which will probably follow from moving Troops, British and Native, in course of relief by rail instead of by route march.

On the advantages of fortified posts as shewn during the Mutiny.

Punka-pulling by machinery adapted to Barracks and Hospitals of European Troops.

On Regimental Workshops, Gardens, and Soldiers' Industrial Exhibitions, and the disadvantages of the existing system of Annual Prizes.

On the formation of new cantonments, and the conditions under which Civilians should be permitted to purchase house property therein.

On the carriage of the Regimental reserve of Breech-loading Ammunition in Mountain Warfare.

On Military Law as a branch of an Officer's Education.

On the uses of torpedoes in River and Coast defence in India.

On the advantages of practice against moving targets for Artillery and Infantry.

On the advisability of amalgamating the departments of Adjutant General and Judge Advocate General, in view to the administration of pure discipline and Military Law moving hand to hand.

On the requirements of a force of, say, 20,000 men, organised in India, for service in foreign parts, as regards Officer for staff employ with the force, and as to the best means of supplying them under the present organisation of the Native Army.

On the best means of educating Native Officers, so as to bring them up to the requirements of the present day as regards military knowledge.

Critical accounts and reviews of the siege operations of Indian Campaigns.

On the necessity for systematizing of Military Dispatches and Reports, so as to prevent the future omission of reports on professional points.

The causes of the increase of crime in the Army in the hot season and its remedy.

*N. B.*—This List is not meant to deter any one from writing on any other subjects. Any additional suggestion will be entered in the next Number.

**PATRON :**

**His Excellency THE EARL OF MAYO, K. P., G. C. S. I.,**  
*Viceroy and Governor General of India.*

**VICE PATRONS :**

**His Excellency GENERAL LORD NAPIER OF MAGDALA, G. C. B., G. C. S. I.,**  
*Commander-in-Chief in India.*

**His Excellency LIEUT.-GENERAL THE HON'BLE SIR AUGUSTUS SPENCER, K. C. B.,**  
*Commander-in-Chief, Bombay Army.*

**His Excellency REAR ADMIRAL JAMES COCKBURN,**  
*Commander-in-Chief, Royal Navy on the Indian Station.*

**COUNCIL.**

**Major-General HUYSE, R. A.**

**Colonel C. C. FRASER, C. B., V. C., 11th Hussars.**

**Colonel J. WATSON, C. B., V. C., 13th Bengal Lancers.**

**Colonel OSBORNE, C. B., 6th Royal Regiment.**

**Colonel ROSS, 14th Forozepore Regiment.**

**Colonel McLeod INNES, V. C., Royal Engineers.**

**Colonel Hon'ble F. THESIGER, C. B., Adjutant General.**

**Colonel DICKENS, C. S. I., Secretary to Government, Public Work Department.**

**Surgeon J. M. CUNNINGHAM, Sanitary Commissioner.**

**Surgeon A. F. BRADSHAW, Surgeon to His Excellency the Commander-in-Chief.**

*The rest of the Council have not yet been elected.*

**SECRETARY, (Acting.)**

**CAPT. ARTHUR CROOKSHANK, 32nd Pioneers.**

*The following Members have joined since the publication of the last Journal No. 3.*

| No.                                                                                                                                           | RANK AND NAMES.                    | CORPS.                              | REMARKS. |
|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------|----------|
| 1                                                                                                                                             | Major C. C. Gordon                 | Brigade Major                       |          |
|                                                                                                                                               | Major H. Melvill                   | 19th Bengal Cavalry                 |          |
|                                                                                                                                               | Major G. M. Dobbin                 | Royal Artillery                     | Paid     |
|                                                                                                                                               | Lieut. H. M. L. Hutchinson         | 14th Foot                           | Paid     |
| 5                                                                                                                                             | Lieut. C. B. Norman                | 1st Regiment                        | Paid     |
|                                                                                                                                               | Colonel T. Wright                  | Deputy Adjutant General             |          |
|                                                                                                                                               | Lieut.-Col. R. E. F. Henegan       | Royal Artillery                     | Paid     |
|                                                                                                                                               | Lieut.-Col. A. F. Baird            | Executive Engineer                  | Paid     |
|                                                                                                                                               | Colonel J. Field, c. b.            | Bombay Infy., A.-D.-C. to the Queen | Paid     |
| 10                                                                                                                                            | Captain Gordon Loch                | 14th Lancers                        | Paid     |
|                                                                                                                                               | Major-General Charles Prior        |                                     | Paid     |
|                                                                                                                                               | Dr. G. Massy                       | Civil Surgeon                       | Paid     |
|                                                                                                                                               | Captain Charles Mercer             | 1st Goorkhas                        | Paid     |
|                                                                                                                                               | Major J. Turtor                    | 4th Goorkhas                        | Paid     |
| 15                                                                                                                                            | Captain G. Gunning                 | Brigade Major, N. District          |          |
|                                                                                                                                               | Major W. Tweedie                   | Bengal Staff Corps                  | Paid     |
|                                                                                                                                               | Major Mayue                        | Royal Engineers.                    | Paid     |
|                                                                                                                                               | Lieut. C. Hooper                   | 18th Hussars                        | Paid     |
|                                                                                                                                               | Lieut. T. A. Bailes                | 18th Hussars                        | Paid     |
| 20                                                                                                                                            | Lieut. J. Stuart                   | 18th Hussars                        | Paid     |
|                                                                                                                                               | Cornet R. Knox                     | 18th Hussars                        | Paid     |
|                                                                                                                                               | Harman Tyndall Esq.,               | Civil Engineer, P. W. D.            | Paid     |
|                                                                                                                                               | Lieut.-Col. E. W. Dun              | 6th N. Infy., Hyderabad Contingent  | Paid     |
|                                                                                                                                               | Captain C. J. O. Fitz Gerald       | 3rd Cavy., Hyderabad Contingent     | Paid     |
| 25                                                                                                                                            | Captain George C. Hogg             | Adjutant, Poona Horse               |          |
|                                                                                                                                               | Sergeant's Mess                    | 1-17th Regiment                     | Paid     |
|                                                                                                                                               | Soldier's Library                  | 1-17th Regiment                     | Paid     |
|                                                                                                                                               | Major J. W. Sherer                 | Staff Corps                         | Paid     |
|                                                                                                                                               | Lieut.-Col. C. O. Maude            | Deputy Judge Advocate, Bombay       |          |
| 30                                                                                                                                            | Lieut. Du Vernet                   | Aide-De-Camp                        |          |
|                                                                                                                                               | Lieut.-Col. W. L. Cahusac          | 21st Bombay Native Infantry         | Paid     |
|                                                                                                                                               | Captain G. M. Lyons                | 21st Bombay Native Infantry         | Paid     |
|                                                                                                                                               | Captain J. Becke                   | 21st Bombay Native Infantry         | Paid     |
|                                                                                                                                               | Lieut.-Col. W. Creagh              | 19th Bombay Native Infantry         |          |
| 35                                                                                                                                            | Captain S. J. Waudley              | 19th Bombay Native Infantry         |          |
|                                                                                                                                               | Captain A. G. Huyshe               | 49th Foot                           |          |
|                                                                                                                                               | Lieut.-Col. St. J. Mutter          | Bombay Staff Corps                  |          |
|                                                                                                                                               | Lieut. E. T. Dickens               | 49th Foot                           |          |
|                                                                                                                                               | Captain W. F. Hume                 | Adjutant, 11th Native Infantry      |          |
| 40                                                                                                                                            | Major B. W. Ryall                  | 3rd Bombay Cavalry                  |          |
|                                                                                                                                               | Ensign D. D. Price                 | 21st Madras Native Infantry         |          |
|                                                                                                                                               | Lieut. J. D. Snodgrass             | Royal Artillery                     | Paid     |
|                                                                                                                                               | Sergt-Major C. J. Sylvester, M. D. | Bombay Medical Department           | Paid     |
|                                                                                                                                               | Lieut. W. H. Hallete               | Madras Staff Corps                  |          |
| 45                                                                                                                                            | Ensign E. W. B. Hope               | 8th Foot                            | Paid     |
|                                                                                                                                               | Captain H. R. Mead                 | Royal Engr., Messrs. Bring & Co.    |          |
|                                                                                                                                               | Colonel C. O. Barton               | Royal Artillery                     | Paid     |
|                                                                                                                                               | Captain S. Penny                   | Royal Artillery                     | Paid     |
|                                                                                                                                               | Lieut. R. Hunter                   | 41st Regt., Madras Native Infy.     |          |
| 50                                                                                                                                            | Lieut. E. C. Elliston              | Bombay Staff Corps                  |          |
|                                                                                                                                               | Captain A. A. Johnson              | 4th Regt., Cavy., Hydbd. Contngt.   | Paid     |
|                                                                                                                                               | Major E. Hill                      | 4th Regt., Cavy., Hydbd. Contngt.   | Paid     |
|                                                                                                                                               | Captain H. C. Onslow               | 4th Regt., Cavy., Hydbd. Contngt.   | Paid     |
|                                                                                                                                               | Asstt.-Surgeon J. A. W. Spence     | 4th Regt., Cavy., Hydbd. Contngt.   | Paid     |
| 55                                                                                                                                            | Lieut. H. C. Seton                 | Royal Artillery                     | Paid     |
|                                                                                                                                               | Lieut.-Col. G. Adney               | 2nd Regt., Infy. Hydbd. Contngt.    | Paid     |
|                                                                                                                                               | Major C. J. Smith                  | 2nd Regt., Infy. Hydbd. Contngt.    | Paid     |
|                                                                                                                                               | Asstt.-Surgeon Laing               | 2nd Regt., Infy. Hydbd. Contngt.    | Paid     |
|                                                                                                                                               | Lieut.-Col. R. H. Sankey           | Royal Engineers                     |          |
| 60                                                                                                                                            | Captain H. C. P. Rice              | 1st Sikh Infantry                   | Paid     |
|                                                                                                                                               | Colonel R. Cadell                  | Dy. Insp. Genl. of Ordnance         |          |
|                                                                                                                                               | Major A. G. F. Hogg                | Asst. Quarter Master General        |          |
|                                                                                                                                               | Major Twentymen                    | 18th Hussars                        | Paid     |
| 64                                                                                                                                            | Captain B. Fenwick                 | Editor, Englishman Newspaper        |          |
| <p>Captain J. F. F. Cologan, 18th N. I. (as a corresponding Member, at Goruckpore.)</p> <p>Major E. Hills Translating French and Italian.</p> |                                    |                                     |          |

**N. B.**—In consequence of some slight dislocation of arrangements, owing to change of Secretaries, the List of Corresponding Members and Translators, as well as a summary of the Proceedings of the Council up to date, are unavoidably omitted in this Number. Captain Crookshank, 32nd Pioneers, kindly officiated as Secretary from the date of the departure of the former Secretary, till his departure from Simla, and the thanks of the Council are due to him for his exertions in the cause of the Institution.



# ORIGINAL PAPERS.

## I

### Military Items.

THE aim of the writer of this paper has been to make a list of some of the more important facts and circumstances of the military service; and to present, in a minimum of space, a bird's-eye view, as it were, some of the matters which may demand the attention of the military legislator. He is well aware of the shortcomings of this attempt, but, so far as he is aware, nothing of the kind has been hitherto attempted (1); and it may at all events suggest the plan of a more perfect tabular view of the subjects of military polity (2).

#### CONTENTS.

#### CONTENTS.

- PART I.—Of the Army as a whole.  
 II.—Of Military equipment.  
 III.—Of the nature of warlike operations.  
 IV.—Of putting an Army in the field.  
 V.—Of its administration when in the field.

#### ARMY AS A WHOLE.

#### PART I.—OF THE ARMY AS A WHOLE.

|                  |                                          |                                                                         |
|------------------|------------------------------------------|-------------------------------------------------------------------------|
| 1. Construction. | 1. The construction of an army comprises | { Military policy of the State.<br>" organisation.<br>" administration. |
| 2. Handling.     | 2. Its handling comprises                | { Drill.<br>Tactics.<br>Strategy.                                       |

(1). The individual items have been treated of by various authors separately; this paper aims only at showing them in juxtaposition, arranged in their natural order.

(2). The idea of the form of this paper has been borrowed from "Indian Polity," by Colonel George Chesney, R. E. The matter is from various sources; principally Wolseley's "Soldier's Pocket Book for Field Service;" and Lieutenant-Colonel Robert's paper in No. 1 of this journal.

B

|                                |                                                                                                                      |                                                                                                                                                                                                                           |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3. Adminis-<br>tration.        | 3. The adminis-<br>tration of the mili-<br>tary service as a<br>whole comprises the<br>following depart-<br>ments :— | { Military departments (proper.)<br>Control (or supply) proper (3).<br>Ordnance.<br>Engineer (4).<br>Medical.<br>Veterinary.<br>Accountant General (5).<br>Intelligence (6).                                              |
| 4. Branches<br>of the service. | 4. Branches of<br>the service (7).                                                                                   | { Combatants, Staff (general and<br>personal).<br>Cavalry } The troops<br>Artillery } themselves.<br>Engineer }<br>Infantry }<br>Non-combatants. Control<br>Corps.<br>Medical.<br>Veterinary.<br>Chaplains, Military (8). |
| 5. Divisions<br>of duty.       | 5. Military duties<br>comprise those of                                                                              | { Command, carried out through<br>the Staff.<br>Supply, (9) carried out by the<br>non-combatant branches.                                                                                                                 |

(3). Including, according to the recommendations of Lord Strathnairn's Committee :—

Commissariat, in 3 branches. { Provisions. (Food, forage, fuel, and light.)  
Stores and clothing.  
Hospital.

Transport Account Department. { Staff Paymasters.  
Treasurers.

See Wolseley's Pocket Book for Field Service, p. 34.

"The Civil Department."

(4). Including all military works and buildings.

(5). The chief financial authority is thus designated.

(6). See note at end of this paper.

(7). In India some of these branches comprise both a European and a native contingent.

(8). Everywhere but in India the spiritual wants of the troops are supplied by a special corps of Army Chaplains, comprising Episcopalian, Roman Catholic, and Presbyterian Ministers ; with a Chaplain-General over all. The clergy of the different denominations are all on an equal footing.

(9). The word "supply" is here taken in its widest sense, including all the wants of man and beast.

6. Internal divisions.

6. Divisions (internal) of the Army.

*Tactical.*—The men are collected into troops, batteries, and companies. These again are collected into regiments, battalions, and brigades (11). The regiments are further collected into brigades, divisions, and sometimes into army corps (10).

*Local.*—Armies in various places, as in the United Kingdom, India, North America, or in the field. Each of these again is (or may be) sub-divided, according to its size, into divisions, districts, brigades, garrisons, or stations, and detachments.

7. Chain of responsibility.

7. The chain of command and responsibility (12).

The Supreme Control (13).

Local Commander-in-Chief.

Army Corps (Corps d'armée).

Division.

Brigade, garrison, or station.

Regiment; or brigade of artillery.

Troop, battery, or company (14).

Soldier.

8. Classes of troops.

8. Troops may be classed as (15)

In peace.—Active (or standing) army.

Reserves.

In war.—Field troops.

Garrison troops.

Depôt troops.

(10). In the British service Infantry Regiments have usually only one battalion each. In France and North Germany each Infantry Regiment consists of three service battalions, together with, in war time, a depôt battalion.

(11). The artillery in the British service is divided into brigades of from five to ten batteries each.

(12). Some of the above links may occasionally be missing. The order of such as are present is as above stated.

(13). The connecting link, if any, between the local Commander-in-Chief and the Government of the country. This may be a Secretary of State, Secretary to Government, or a Board like the Admiralty.

(14). There may a connecting link between the troops, battery, or company; and the soldier, like the division in the artillery service. But this link being much less distinct than any of the others, has been omitted in the above chain, as being of minor importance.

(15). All the various branches of the service (see para. 4) may be included under each of these five heads.

|                          |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9. Artillery duties.     | 9. The duties of the artillery comprise those of (18) | <div> <div> Horse artillery.<br/> Light field bat-<br/> teries.<br/> Heavy do.(16).<br/> Mountain ar-<br/> tillery (16). </div> <div> {<br/> All or any<br/> of these may<br/> be employed<br/> in operation<br/> in the open<br/> field. </div> </div> <div> <div> Siege do.(17).<br/> Garrison do. </div> <div> {<br/> Attack and<br/> defence of for-<br/> tresses and<br/> fortified posi-<br/> tions. </div> </div> |
| 10. Artillery personnel. | 10. The personnel of the artillery com-<br>prises     | <div> <div> Horse artillery brigades.<br/> Field ditto.<br/> Garrison ditto (19). </div> <div> { </div> </div>                                                                                                                                                                                                                                                                                                           |
| 11. Cavalry personnel.   | 11. British cavalry comprises                         | <div> <div> Heavy cavalry.<br/> Medium ditto.<br/> Light ditto. </div> <div> { </div> </div>                                                                                                                                                                                                                                                                                                                             |
| 12. Cavalry equipment.   | 12. Cavalry are divided, as regards equipment, into   | <div> <div> Cuirassiers. (20)<br/> Dragoons.<br/> Lancers.<br/> Hussars. </div> <div> {<br/> Always heavy cavalry.<br/> (21) May be of any weight.<br/> Always light. </div> </div>                                                                                                                                                                                                                                      |

(16). Essentially field artillery duties; but in India the batteries so employed belong to garrison brigades.

(17). A garrison artillery duty.

(18). Artillery material (ordnance, carriages, ammunition and miscellaneous stores) must also be provided for naval service, as well as for the six branches of land artillery service here specified.

(19). Garrison artillery brigades in India furnish batteries for four distinct purposes: heavy field batteries, mountain batteries, and for siege and garrison services.

(20). The only cuirassiers in the British service are the household troops.

(21). There are both heavy and medium regiments of dragoons in the British service; lancers are medium. Marshal Marmon considered (*L'esprit des institutions militaires*) that lancers should be heavy cavalry; on the other hand, the Cossacks are light. British cavalry as originally raised consisted of heavy and light dragoons only; lancers, hussars, and cuirassiers being comparatively recent introductions (*i. e.*, within the present century) from foreign service. Query—Is there any difference between a light dragoon and a hussar, except as regards dress?

MILITARY  
EQUIPMENT.

PART II.—OF MILITARY EQUIPMENT.

|                                 |                                                               |                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13. Available<br>in             | 13. Military equip-<br>ment must be avail-<br>able for use in | <div> <div> Cold climates<br/>Temperate "<br/>Hot       " </div> <div> And for<br/>either peace or<br/>war, garrison<br/>or field service<br/>in any of these<br/>(22). </div> </div>                                                                                                                                                             |
| 14. Convey-<br>ance of baggage. | 14. Military bag-<br>gage (23) may have<br>to be conveyed by  | <div> <div> Water.—By sea.<br/>          " inland navigation.<br/>Land.—By railway.<br/>          " cart.<br/>          " elephant.<br/>          " camel.<br/>          " mule, horse or<br/>              bullock.<br/>          " coolie. </div> </div>                                                                                        |
| 15. Officers'<br>baggage.       | 15. Baggage of an<br>officer on service<br>comprises (25)     | <div> Arms (24).<br/>Clothing.<br/>Washing &amp; dressing apparatus.<br/>Cooking and feeding ditto.<br/>Bedding.<br/>Writing apparatus (26).<br/>Books (27).<br/>Instruments (28).<br/>Camp equipage.<br/> <div> Personal baggage—<br/>Soldiers' kits.<br/>Officers' kits.<br/>Companies' baggage—<br/>Office (29).<br/>Spare arms. </div> </div> |

(22). This does not mean that one and the same list should be suitable for all these circumstances; that would be impossible. But as soldiers may be exposed to all these vicissitudes (even Indian troops have experienced severe cold when on service in Affghanistan and China,) provision should be made to meet them.

(23). The word "baggage" is here taken in its widest sense, including supplies of all kinds. See paras. 15 and 16.

(24). Sword, revolver, ammunition for ditto, belts.

(25). Some field kit ought to be specified by authority. See note C at end of this paper.

(26). (1.) For private correspondence.  
(2.) For official ditto.

(27). Official books. See note C at end of this paper.

(28). For staff, engineer, and medical officers.

(29). See note B at the end of this paper.

|                         |                                       |                                                                                                                                                                                               |
|-------------------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16. Regimental baggage. | 16. Baggage of a regiment on service. | Regimental baggage—<br>Office (29).<br>Qr.-Mr.'s Stores.<br>Medical ”<br>Camp equipage.<br>Ammunition.<br>Canteen (?)                                                                         |
| 17. Army in field.      | 17. An army in the field comprises    | <div> Troops.<br/>Camp followers.<br/>Animals. </div> <div> <i>Personnel.</i><br/>All these must be supplied with the necessaries of life.<br/><i>Material.</i> </div>                        |
| 18. Material.           | 18. Material of an army in the field. | <div> Regimental baggage.<br/>Commissariat supplies.<br/>Ordnance stores.<br/>Field hospitals.<br/>Pontoon train (30).<br/>Siege train (30).<br/>Horse dépôt (31).<br/>Military chest. </div> |

WARLIKE OPERATIONS.

PART III.—OF THE NATURE OF WARLIKE OPERATIONS.

|                          |                                      |                                                                                                                                                      |
|--------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19. Nature.              | 19. Warlike operations may be        | <div> Exclusively naval.<br/>Ditto military.<br/>Of a combined naval and military nature. </div>                                                     |
| 20. Direction.           | 20. They may be directed against     | <div> External foes.<br/>In attacking our neighbours.<br/>In repelling attack.<br/>Internal foes.<br/>In case of rebellion.<br/>Ditto mutiny. </div> |
| 21. Military operations. | 21. Military operations include (32) | <div> Operations in the open field.<br/>The attack and defence of fortresses and fortified positions. </div>                                         |

(30). May or may not be required. It depends entirely on the nature of the country in which the army is operating.

(31). See Wolseley's Pocket Book for Field Service, p. 42.—“The supply of horses and other transport animals.”

(32). Mountain warfare and street fighting must not be forgotten.

**PUTTING AN  
ARMY IN THE  
FIELD.**

**PART IV.—OF PUTTING AN ARMY IN THE FIELD.**

22. Mobilisation.

22. Bringing an army from the peace to the war footing *i.e.*, mobilising it, comprises

{ Augmenting the army to the war establishment (33).  
Telling it off into field, garrison, and dépôt troops (see para. 8).  
Equipping the field troops for service.

23. The field army.

23. The composition and strength of the field force depends on

{ The proposed theatre of operations, its nature, extent, and resources (34).  
The strength, composition, and condition of the other armies engaged, whether as enemies or allies.  
Nature of the population of the theatre of war, whether friendly, neutral, or hostile.

24. Time of despatch.

24. Its time of despatch may depend on (35)

{ The climate—  
Of the theatre of operations.  
Of the countries or seas through which the army must proceed.  
Of the country whence it starts.

Field equipment.

25. Its equipment depends on

{ The same circumstances as detailed in the preceding paragraphs.  
Whether it is to proceed by land or sea.

(33). Calling out the reserves, if there are any.

(34). The Russian army employed in European Turkey during the war of 1828-9, was very weak in cavalry, as the Russian authorities believed forage to be scarce in that country. But their arrangement proved to be mistaken, for the inconvenience caused by the Turks cutting off convoys and foraging parties, and intercepting communications, which their superiority in cavalry enabled them to do, far outweighed the difficulty of subsisting a large force of this arm. (See Von Moltke's History of the War).

(35). See the paper by Lieutenant-Colonel Roberts, V. C., R. A., in No. 1 of this journal. A knowledge of the physical geography of the countries (and seas) concerned, will be found most useful.

Even if an army proceeds in the first instance by sea, it will have to move by land eventually ; hence

|               |                                                              |                                                                                                                                                                                                                                                                                                                                                                    |
|---------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 26. Shipping. | 26. The shipping for a force despatched by sea includes (36) | <div style="display: flex; align-items: center;"> <div style="font-size: 4em; margin-right: 10px;">{</div> <div> Ships for troops—<br/> Ordinary transports.<br/> Horse transport.<br/> Ships for sick.—Hospital ships.<br/> Ships for stores (37).<br/> Ordnance (38).<br/> Commissariat (39).<br/> Ships for baggage animals and their attendants. </div> </div> |
|---------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                 |                                                           |  |
|---------------------------------|-----------------------------------------------------------|--|
| ADMINISTRATION<br>IN THE FIELD. | PART V.—OF THE ADMINISTRATION OF AN ARMY IN<br>THE FIELD. |  |
|---------------------------------|-----------------------------------------------------------|--|

|                                    |                                   |                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 27. Supplies required.             | 27. An army in the field requires | <div style="display: flex; align-items: center;"> <div style="font-size: 4em; margin-right: 10px;">{</div> <div> Letters and papers.<br/> Supplies of recruits.<br/> Ditto horses and baggage, cattle.<br/> Supplies of provisions, forage, fuel, and light.<br/> Supplies of stores and clothing.<br/> " of hospital stores.<br/> " of ordnance stores.<br/> " of cash. </div> </div> |
| 28. Sources of supply.             | 28. Supplies may be obtained from | <div style="display: flex; align-items: center;"> <div style="font-size: 4em; margin-right: 10px;">{</div> <div> The country whence it was despatched.<br/> The country in which it is acting.<br/> Adjacent countries. </div> </div>                                                                                                                                                  |
| 29. Methods of obtaining supplies. | 29. Method of raising supplies.   | <div style="display: flex; align-items: center;"> <div style="font-size: 4em; margin-right: 10px;">{</div> <div> Purchase.—By contract.<br/> By direct purchase by the departments concerned.<br/> Requisitions. </div> </div>                                                                                                                                                         |

(36). See also Wolseley's Pocket Book for Field Service, pp. 87 to 115 ; and Lieutenant-Colonel Robert's paper in No. 1 of this journal. For detail of what has to be embarked, see paras. 17 and 18.

(37). Part of the stores may be embarked on board the troop-ships. (Lieutenant-Colonel Roberts, v. c.)

(38). The French "Aid Mémoire à l'usage des officiers d'artillerie" recommends all spare ordnance stores to be embarked on board particular ships by themselves, such ships to carry a distinguishing flag.

(39). Ships may be required to carry cattle, these will need special fittings.



|                        |                                             |                                                                                                             |
|------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 30. Articles returned. | 30. It will return to its own country (40). | { Letters, returns, &c., (papers of sorts).<br>Sick and wounded men (bad cases).<br>Invalids.<br>Prisoners. |
|------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------|

## NOTES ON THE PRECEDING PAGES.

- A.—On an intelligence department.
- B.—On the office work of an army on service.
- C.—On field equipments.

### A.—ON AN INTELLIGENCE DEPARTMENT.

The necessity to an army in the field of a good intelligence department is generally admitted. It seems, however, to the writer that much good would accrue to the service, if a small intelligence department were formed and kept up, in peace as well as in war, as a branch of the Army Head-Quarter Staff. The necessity for information must be felt as soon as war is seen to be inevitable, or even highly probable. Is it to be an offensive or a defensive war; a purely naval, purely military, or a combined operation? (41). If an army is to be despatched to a foreign country, what are the nature and extent of its proposed theatre of operations, the strength and condition of its enemies and allies, the disposition and character of its population? (42). Are these fortresses to be attacked? then will a siege train be required, and garrison artillery to serve it (43). Are there large and unbridged rivers to cross? (43), then a pontoon train may be necessary. Of what arms of the service is the force to be composed, what shall be the strength of each arm, and consequently that of the whole? The answer to this question will depend greatly on the nature of the country, whether mountainous or level, enclosed or open; and also on its resources (44). For it must not be forgotten that the entire force, soldier and follower, man and beast (see para. 17) must be fed; and thence arises the question of what supplies are necessary, whence can they be obtained, by what means, and finally, *when*? (45). All these things

(40). Of course a British army never plunders; if it did, loot would form another item to be brought back.

(41). See Part III.—Of the nature of warlike operations.

(42). „ „ IV—Of putting an Army in the field.

(43). „ para. 18.—Material of an Army in the field.

(44). „ para. 23.

(45). „ Part V.

being settled, there arises the question of equipment, at least as regards clothing and camp equipage; this again depends on the climate (46). Then at what time of year is the force to start, and whether by land or by sea; to what sort of climate is it going, what diseases may be expected, and are any particular sanitary precautions necessary? (47). Altogether, without pursuing the subject further, it appears that a large amount of information, and of a very varied nature, will be required at, or immediately before the outbreak of a war, and previous to the assembly of a force for service, and, consequently, before its intelligence department can be formed, or at least got into working order; it also appears that this information can, if a proper system be adopted, be obtained and digested in time of peace, so as to be ready for immediate use in time of war. Not merely would such a department as is here proposed be able to furnish very valuable information to the Government and superior military authorities when war appeared probable, but it would also be able, on the assembly of a force for service, to supply to the general and staff officers all the maps, plans, and general information they might require, all of the most recent and authentic description. It would, in fact, be the general information shop of the service.

---

#### CONSIDERATIONS AS TO THE FORMATION OF AN INTELLIGENCE DEPARTMENT.

From para. 20 we see that warlike operations may be either within or beyond our own territories. Hence it would seem that the department should comprise a British and a foreign section; the first to deal with our own territories, the second with such foreign territories as there is any chance of our being engaged in, whether as allies or enemies.

The information required may be classed under two heads, topographical and statistical.

It may also be considered, under the aspects, military, commissariat, medical.

Thus, a country may be regarded :—

- (1). As a fighting ground.
- (2). As a place where armies must be supplied with the means of subsistence and movement.
- (3). As a place where disease is to be encountered, prevented if possible, and such cases as may occur, cured.

It appears that every country, where a British force may be engaged, should be regarded from these points of view.

---

(46). See para. 13.

(47). „ paras. 24, 25.

An extensive list of subjects on which information may be required, relative to the subsistence of an army on service, may be found in Foublanque's "Administration and Organisation of the British Army."

## SUMMARY.

### PROPOSED INTELLIGENCE DEPARTMENT.

|                                 |                                                                                                                                                                                                                                                                                                   |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objects.                        | 1. Its objects are to acquire all needful military information for :<br>A.—The Government and superior military authorities at all times, and especially before, and at the outbreak of a war.<br>B.—The Generals and Staff of a force proceeding on service, as soon as they are appointed (48). |
| Range.                          | 2. It keeps a watchful eye on all countries wherein British forces may be engaged (49).                                                                                                                                                                                                           |
| Method of treating the subject. | 3. It regards each country—<br>A.—From a military point of view ( <i>i. e.</i> , as a fighting ground).<br>B.—From a commissariat ditto.<br>C.—From a medical ditto.                                                                                                                              |
| Arrangement.                    | 4. It arranges its information under two heads :—<br>A.—Topographical.<br>B.—Statistical.                                                                                                                                                                                                         |
| Division.                       | 5. It divides the territories it looks after into two sections :—<br>A.—British.<br>B.—Foreign.                                                                                                                                                                                                   |

It is essential that the department should have the means of engraving and printing both maps, plans, and ordinary book-work, well, rapidly, and *secretly*.

---

(48). This duty includes the supplying the intelligence department of the field army, on starting, with all the information available; giving it its outfit as it were.

(49). This may appear to be a gigantic task. But all that would appear necessary at first would be to draw up an outline of the required information. The framework having once been carefully constructed, the completion might be executed by degrees, as opportunities offered, and the necessities of the service might require. But the head of the department should be always prepared at a short notice to complete his information regarding any particular country. The writer believes firmly in the proverb "*Coming events cast their shadows before them*;" and if the department be got into good working order in time of peace, and the outline of its work drawn up, a good foundation laid, in fact, there should be no difficulty in getting everything ready in time. The head of the department must be very unfit for his post if he does not know where and from whom to look for information.

RECAPITULATION.

RECAPITULATION.

Sources of information.

The primary study of this department is general geography, descriptive and physical. Then, on general geography as a foundation, come the studies of military, commercial, and medical geography ; including a knowledge of what languages are current in the various parts of the world ; and military statistics and institutions.

Among other sources of information may be mentioned :—

1. The Royal Geographical Society ; as regards general geography, especially of the more remote parts of the world.

2. The military attachés to the various Missions to European courts.

3. The Board of Trade ; and H. M.'s Consular Service, as regards commercial geography.

It is believed that much assistance might be derived from the last mentioned source as regards the entertainment of interpreters and spies for employment under the intelligence department of an army in the field.

---

B.—THE OFFICE WORK OF AN ARMY ON SERVICE.

General Remarks.

No force can get on without a certain amount of pen and ink work ; report and despatches must be written, orders issued, returns and indents made out, and some attempt be made at keeping accounts. The questions now arise—

1. What office work is to be done ?

2. What provision is to be made for doing it ?

It may be remarked that neither office work nor any other work can be done without means ; bricks cannot be made unless the needful straw has previously been supplied. Consequently, for every paper, whether printed or written, and for every record and account required to be kept up, there are required :

---

For further remarks on this subject, see Jomini's " *Précis de l'art de la guerre*," Articles XI and XIII, paras. 6 and 7.

Requirements  
of office work.

1. Directions or orders, *i. e.*, a specification of the work to be done.
2. Material means. Books, printed forms, pens, ink, paper, envelopes, and office necessities in general.
3. Clerical labor.
4. Time and opportunity for doing the work.

No military author has, so far as the writer is aware, even attempted to go into this subject (1); and the office details of a force in the field have nowhere been laid down by authority (2).

The system now prevailing in time of peace appears to be far too cumbrous and complicated for use in war. Let any one go into a Military Office and look at the accumulation of books, papers, orders, (bound and in files), returns, the piles of paper of all sorts; let him look over the lists of returns to be furnished both to and by the office, the lists of letters and memos. received and sent; let him enquire the amount of time and labor required to keep the whole thing going; finally, let him (if he be the head of the office) just *weigh* the contents of the office, and note the total. When all these things have been done, he may ask if it be possible to carry out such a system in the field. If satisfied as to this, let him proceed to ask if this system be either necessary or desirable, whether, supposing it to be possible to carry it out at all, the results to be attained are worth the expenditure of carriage, time, and labor (3), and whether, in short, the wants of the army might not be adequately met by a much simple and less laborious process.

It may be said that no such system of office work, as now prevails in time of peace, would be ever attempted on service. Let us hope that this is so; but whatever may be the views of the powers that be, they should be expressly laid down during peace, so that the outbreak of hostilities may not find things in a doubtful or uncertain condition.

---

SUMMARY.

What appears to be required is:—

1. A classification of the various military offices (4). For each separate class of offices would be needed—

---

(1). Wolsley speaks of it (pp. 18-25), but gives no details, merely speaking of the necessity for simplifying and lightening the present system.

(2). The Queen's Regulations, para. 1534, mention the subject, but give no detail, merely a general caution.

(3). It matters little at whose cost the office work is done; every pound weight (beyond what the men carry themselves) adds to the impediments of an army. Increase of weight means increase of baggage, animals and followers, consequently an increase of mouths to be fed, and additional strain on the resources of a district. But far worse than this is the waste of labor. No man, however able or zealous, can do more than a certain amount of work in a given time. The longer, therefore, he is kept at office work, the less time will he have for other duties.

(4). See paras. 5 and 7.

2. A complete detail of all the office work required in the field, giving lists of all the returns and accounts to be sent in, and of all the books and records to be kept up.

3. A detail of all the books, forms, and stationery required for carrying out the duties prescribed above (5).

4. A system of packing the various books, forms, and stationery detailed in the preceding paragraph. The number and nature of the boxes required should be given, the contents of each, and its weight when packed (6).

We should thus arrive at the gross weight of the equipment of each office, for which carriage would have to be provided on service (7).

In carrying out such a plan, certain things  
should ever be borne in mind, *viz.* :—

Cautions.

1. That the total amount of work assigned to any office *must not* be more than it can reasonably be expected to accomplish *on active service* (8).

2. That nothing is to be expected from any office, unless the means of doing it have been provided. Hence, care must be taken that the office materials ordered to be kept up be sufficient to carry out all the prescribed office duties (9).

(5). The supply of stationery to be calculated to last a given time, as for six or twelve months.

(6). The office equipment should be so arranged as to travel (like all military equipment) conveniently by as many as possible of the various ways detailed in para. 14.

(7). See Appendix XXXIV to the blue book of evidence taken before Lord Strathnairn's Committee on the transport and supply departments of the army, p. 498. Also pp. 508-9 of the same book. From this it appears that the following provision is (or was) made in the Russian army for the carriage of office equipment in the field, *viz.* :—

|                      |                         |             |
|----------------------|-------------------------|-------------|
| 1. For each Company. | The Company's pay chest | ... 50 lbs. |
| 2. " " Battalion.    | The Battalion chest     | ... 300 "   |
|                      | Paymaster's books       | ... 40 "    |
|                      | Adjutants's ditto       | ... 40 "    |

There were also :—

|                                                         |                                |
|---------------------------------------------------------|--------------------------------|
| 3. For a Corps Intendence                               | } Each one waggon for records. |
| 4. " Division "                                         |                                |
| 5. " the stores required by the field batteries.        |                                |
| 6. For the military chest—3 waggons.                    |                                |
| 7. " a field Post Office—1 waggon for carrying letters. |                                |

(8). "Nothing more can be done than is possible."

(9). The Royal Artillery standing orders of 1864 in prescribing (at p. 84) the books to be kept up by batteries, make no mention of a cash-book. Yet the whole pay of non-commissioned officers and men everywhere passes through the hands of the Captain commanding; and in India, he performs all the duties of Paymaster to his battery. A difficulty ignored is not, however, a difficulty overcome, and so cash-books had to be kept up, nevertheless.

## C.—ON FIELD EQUIPMENTS.

One of the present wants of the military service appears to be a table, or rather a set of tables, of field equipments for the various branches of the service ; applicable to the different circumstances under which a British army might have to take the field. At present, so far as the writer is aware, no such tables have been drawn up, at least not by authority. From para. 15 we see that troops may be actively employed in either cold, temperate, or hot climates ; they may have to face a Canadian or a Russian winter on the one hand, or a hot weather campaign in the plains of India on the other ; not to speak of service in temperate climates, like those of Western Europe. Surely wants so varied require equally varied provision to meet them. As things stand at present, should a force be assembled for service anywhere and under any circumstances, there does not appear to be any rule for its field equipment. So far as the regulations are concerned, it might have to take the whole of its peace equipment with it. Now, however suitable the clothing of the army may be for peace service, surely some portion of what is now prescribed by the dress regulations might be left behind on taking the field. Take the case of the Royal Artillery. Are the gorgeous full dress belts, trousers, sabretache and spurs, of this branch necessary on active service, and is the shabracque a necessary of life under these circumstances ? But putting aside these pomps and vanities, must we take our tunics, (or dress jackets), stable jackets and patrol jackets, all three ? Surely not, especially when the very moderate amount of baggage which it is now proposed to allot to officers on active service comes to be considered. But if we must leave some of our things behind, it would be but fair to state beforehand what things are to be so left ; that when an emergency arises, there may be no question as to what is to be done. Now, take the case of a hot weather campaign, what shall the soldier then wear ? His white clothing, however well suited for barrack life, requires more frequent washing than could always, or even often, be obtained on service. The very extent of his stock of white clothing is objectionable for field service, consisting as it does of four coats or jackets, and six pairs of trousers (1). When all these matters come to be considered, it would, indeed, appear to be time that they should be settled by authority.

Paras. 15 and 16 of the "Military Items" give a list of the various classes of articles which fall under the head of "regimental baggage." It may be remarked that military baggage for field service ought to be such as may be conveniently carried.

## PROCEDURE.

The proper way of proceeding to fix a field equipment would appear to be as follows :—

1. To ascertain the real wants of the service under each of the

---

(1). See the paper "On the Dress of the Army of India," by "Common Sense," in No. 1 of this journal, p. 6. "White clothing."

heads given in paras. 15 and 16 ; and while rigidly rejecting all superfluities on the one hand, to take care that all real necessities were adequately supplied on the other. This gives us a list of certain things.

2. The necessities being thus specified, the weight of each is to be ascertained, and a convenient method of packing each class of kit (whether officer's or soldier's ; or collection of Quarter-Master's or medical stores, as the case may be) is to be derived. Each kit when packed is weighed. We then have the gross weight of each kit, or assortment of stores ; and finally the total weight to be conveyed for each corps.

By such a plan being adopted one could feel confident that the results arrived at would be neither excessive nor insufficient, that they were what were required to meet the wants of the service, neither more nor less. Now, when people speak of field equipments, they are very apt to assume that all that is necessary is to specify some arbitrary weight for each service, which is not to be exceeded. Not the smallest reason do they vouchsafe to give for fixing the limit of weight at the figures they have chosen ; nor do they specify what is or is not to be carried. But, as has been already remarked, to ignore a difficulty is not to overcome it ; the selection *must* be made by some body at some time or other, even if every man has to do it for himself after getting orders to march. A more satisfactory solution of the problem is to be hoped for at the hands of a competent committee assembled in time of peace.

G. C. BAYLY,

*Lieutenant, R.A.*



## II.

### Notes on the Goorkhas.

*This paper comprises:—*

- I.—A sketch of their rise and progress and of the Nepal War.
- II.—Their entrance into, and History in the British Service.
- III.—The castes, tribes, peculiarities, and habits of the Nepalese.
- IV.—General remarks on the preceding Chapter. Notes on Recruiting, Equipment, Dress, Cooking, Messing, and Canteen Systems, and Pay.
- V.—Proposed Establishment.

The origin of the Nepalese is obscure and there is little information to be found in any histories regarding them, but the country of Nepal, a valley in the Himalayas, and bounded on the north by some of its finest Mountains, was overrun in about the middle of the 14th century by several races of Rajpoots, who entered the country and subdued the aborigines, the Newars, a Mongolian race professing the creed of Boodh.

The Goorkhas were a mountain tribe who appear to have got into power through their more warlike character, and their chief finally subdued the other Rajahs in Nepaul, and founded the Goorkha Dynasty about 1767.

They extended their conquests 400 miles to the East to Sikkhim, and on the West to the Kalee River, and their most renowned General Ummur Sing pushed their frontier to the Punjaub, and came in contact with the rising power of Runjeet Sing, and was ultimately foiled at Fort Kangra, which he failed to take after a four years siege.

The Goorkhas retained that passion for war and conquest, to which they owed their recently established dominion, and encouraged by the pacific system of Lord Minto, began to make encroachments on British Territory, and except in the neighbourhood of our Military Stations on the frontier, it was found impossible to check their border forays, or their constant quarrels with our subjects.

In the month of May 1814, while some negotiations were opening, they treacherously attacked and murdered all our Police Officers at Bootwul. Lord Moira, who combined the offices of Governor General and Commander-in-Chief, determined to take measures against these troublesome neighbours.

The Goorkha army consisted of 12,000 men equipped and disciplined in imitation of the Company's Sepoys, their chief strength lay in the impracticability of their country and the utter ignorance of the British Government of the localities, in their own native courage, and skill in constructing stockades.

When war was determined upon, 30,000 British troops with 60 guns, were assembled, and told off into 4 Divisions.

To the reader taking an interest in the Nepal War a perusal of Marshman's History, from which the above has been extracted, will afford one of the most interesting accounts of the subject extant.

The War, though ultimately brought to a successful termination by the brilliant operations of Ochterlony, and final overthrow of Ummur Sing was one very discreditable to the Military abilities of our Generals; yet it reflected the highest credit on the troops engaged, being perhaps the most arduous campaign the Company's army had been engaged in India.

The Goorkhas during the wars displayed conspicuous gallantry.

The defence of Fort Kalunga against General Gillespie was most creditable to them, though exhibiting extreme rashness on his part, as he had been directed to avoid strong works which required to be reduced by Artillery. In this defence 600 Goorkhas repulsed two assaults, inflicting a loss on the British Division of 20 officers, and 930 men, killed and wounded, and when ultimately 3 days' incessant shelling compelled them to abandon the place, the survivors reduced to 70 in number escaped.

The gallant defence by Ummer Sing of the Fort of Malown, the fall of which stronghold together with the victory of Mukwanpore ended the war, elicited the admiration of General Ochterlony, who allowed him to march out with his arms, accoutrements, colors, two guns, and all his personal property "in consideration of the bravery, skill, and fidelity with which he had defended the country entrusted to his charge." The same honorable terms were also granted to his son, who had defended Jytuk against General Martindell.

The Goorkha soldiers did not hesitate to take service under the company's colors, and have been found under them to have lost none of their ancient courage, and have at all times shown, and particularly during the fiery trial of the Indian Mutiny, unshrinking fidelity to the British Government.

There must have been a considerable admixture of Races in Nepal during the days of its early history, of which we can get little information. The Goorkhas after conquering the country undoubtedly mingled and intermarried with the pre-existing races, the result being, that the offspring of such as were more frequently crossed in this manner, lost, to a greater or lesser degree, the Goorkha or Bhôt Physiognomy, while inheriting the superior intelligence of the more civilized race.

For instance, as will be seen further on in the Table of Castes, similar names occur in both the "Khus" and "Muggur" tribes, viz. :—

NOTE.—History in the British Service will be given in another Paper—the material for the compilation of it, not having yet been collected.

“*Khus*”

Thappa

Ghurtee

Rana

Raie

Booratokee

“*Muggur*”

Thappa

Ghurtee

Rana

Raie

Booratokee

Yet any one acquainted with the Goorkha at once recognizes the difference that exists between the two Castes in personal appearance and peculiarities. For example the “*Khus*” Thappa, though generally retaining a great deal of the Bhôt physiognomy, is not so pure a Goorkha as the “*Muggur*” Thappa, he has prejudices which the latter does not entertain, he is more intelligent, generally more deficient in physique and altogether not so good a soldier. These points will however be noted further on under the head of “*Recruiting*” where the most desirable Classes for enlistment will be alluded to, the present Chapter relating to the Nepalese generally.

Goorkhas proper are of Bhôt or Thibetan origin as is shown by the similarity of their language to that now used by the Bhôts, their physiognomy, and other concurrent circumstances.

I.—The peculiarly Goorkha towns in Nepal are the following:—  
Chief Locality. Goorkha — Kâskiê — Pokrâ — Lunnoon, Lungoon — Lunigöon, Pălpă, &c.

II.—The Nepalese are divided into fourteen principal castes or classes, this does not however include the inhabitants of Dhوتي, a province on the extreme south-west of Nepal to whom special reference will be made hereafter. Classes as shown in accompanying Table.

Table showing the names that exist in the several Castes of Goorkhas to be found in the Army—

The five principal classes are—

- |             |     |                |                    |
|-------------|-----|----------------|--------------------|
| I. BRAMIN.  | ... | { 1. Upudhea.  |                    |
|             |     | { 2. Jaice.    |                    |
| II. THAKOOR | ... | { 1. Sahie.    | 5. Somall.         |
|             |     | { 2. Saien.    | 6. Uchaie.         |
|             |     | { 3. Mull.     | 7. Humall.         |
|             |     | { 4. Sing.     | 8. Kowar.          |
| III. KHUS   | ... | { 1. Karkie.   | 9. Kunka.          |
|             |     | { 2. Busnait.  | 10. Raie (Manghie) |
|             |     | { 3. Kuttrie.  | 11. Booratokee.    |
|             |     | { 4. Bundaree. | 12. Ghurtee.       |
|             |     | { 5. Magnit.   | 13. Thappa.        |
|             |     | { 6. Adekaree. | 14. Raol.          |
|             |     | { 7. Rana.     | 15. Pândha.        |
|             |     | { 8. Kowar.    |                    |

|                |   |             |                   |
|----------------|---|-------------|-------------------|
| IV. MUGGUR ... | { | 1. Thappa.  | 6. Raie (Thappa.) |
|                |   | 2. Rokha.   | 7. Uchaie.        |
|                |   | 3. Ghurtee. | 8. Booratokee.    |
|                |   | 4. Alleêa   | 9. Poon.          |
|                |   | 5. Rana.    | 10. Ruchhall.     |
| V. GOORUNG ... | { | 1. Ghullea  |                   |
|                |   | 2. Gabring. |                   |
|                |   | 3. Lama.    |                   |

Of the remaning Classes, five enlist as soldiers, and the four inferior ones do not.

|                    |     |              |             |
|--------------------|-----|--------------|-------------|
| VI. DOORA          | ... | 1. Doora.    |             |
| VII. NUGUR KOTE... | {   | 1. Newar     | 4. Bandha   |
|                    |     | 2. Nugurkote | 5. Dholteêa |
|                    |     | 3. Jaice     | 6. Poorêea  |
| VIII. DEMAË        | ... | 1. Demaie    |             |
| IX. KAMEE          | ... | 1. Kamce     | 2. Lohar    |
| X. SARKIE          | ... | 1. Sarkie    |             |

Four castes of which the members do not enlist.

|       |              |
|-------|--------------|
| XI.   | ... Thukalee |
| XII.  | ... Komallee |
| XIII. | ... Darhaie  |
| XIV.  | ... Manghie  |

N. B. The above Table does not pretend to be a complete one of all the names in the different castes. But is believed to include all or nearly all to be found in the army.

## I. BRAMINS.

III.—The priesthood of the country, if educated, become Pundits and employ themselves in that capacity and in literary pursuits; if not educated, they act as clergy in all religious rites, ceremonies, and observances, they marry only in their own caste and do not enlist into the army in their own country (though many may be found in the British ranks) nor, do they engage in any labor. In Nepal, should an Upadhea Bramin's widow marry another Upadhea, their children "*ipso facto*" become Jaices, which is an inferior Braminical order among them.

## II. THAKOORS.

IV.—Intermarry in their own eight castes, but one caste will not eat with another unless united by social ties. "It must be borne in mind that one castè not eating with another here and wherever it may subsequently be mentioned merely refers to 'Rice' and 'Dhall' in the preparation of which it is necessary to take off the clothes to cook."

"All *Goorkhas* will eat 'Shikar' (a word they use for any description of meat) or *atta*, &c., prepared by another *Goorkha* of superior or equivalent caste, though the cooks are invariably selected from the *Bramin* or *Khus* castes."

Dialect.

The *Thakoor* dialect is different but somewhat assimilates to the "*Khus*."

*Thakoors* are supposed to be of noble birth, those who are not in affluent circumstances enlist in the army or engage in agriculture.

Occupation.

They wear the *Braminical* cord called "*Junneau*" or rather are entitled to do so, but many do not avail themselves of the right, and those who do not do so have not assumed their caste, and will eat with anybody except "*Demaies*" or men of such low caste as cannot take or use water for drinking purposes with them. On being married, however, they are obliged to assume the "*Junneau*" as no individual will give his daughter to one who has not gone through the ceremony. This ceremony is called "*Bunta Bun*" and apparently is equivalent to the *Christian* rite of *Baptism*. This ceremony is generally performed on a *Pilgrimage*, at a *Holy* city like *Benares*, and on the occasion of an *eclipse* at the nearest confluent rivers.

Peculiarities.

The *Thakoor* caste are not allowed to drink *Spirits*. It is considered an infringement of caste to do so, this however is little regarded in the *Military Service* away from their own country, and many never adopt the "*Junneau*" till constrained to do so, or marriage or on going to *Hurdwar* or such place of *Pilgrimage*.

### III. KHUS.

V.—Are identical with the *Thakoors* in their customs but with whom they do not intermarry, but only in their own fifteen castes.

Customs.

The *Khus* dialect is the common language of *Goorkhas* as *Oordo* is in *India* common too and generally understood by all. They either enlist or engage in agricultural pursuits.

Dialect.

### IV. MUGGUR.

VI.—Do not wear the "*Junneau*." It is lawful for them to indulge in the use of ardent *Spirits*. They intermarry in their own ten castes and mostly enlist and become agriculturists.

Customs.

Their language is not the same as the others and even the different castes have various dialects, but as before mentioned, the "*Khus*" dialect is generally understood by them and indeed by all *Goorkhas*.

Language.

V. GOORUNGS.

VII.—Inter-marry amongst themselves. Their chief place is  
 Customs. “Lumgoon” and its vicinity, a town in the north  
 centre of Nepal. They do not wear the Braminical  
 cord and are inferior in caste to Thakoors and Khus. They also have  
 their own provincialisms in language, they principally enlist and are  
 agriculturists.

VI. DOORAS.

VIII.—Formerly came from across the Himalayan range from  
 some part of Thibet. They are looked upon as the “hill men” in  
 particular if such a term can be applied to people in a country which is  
 entirely mountainous. They were permitted by the Goorungs to settle  
 amongst them, and are engaged a good deal in trading across into  
 Thibet and the adjoining territories. They have adopted the customs  
 of the Goorungs, but do not intermarry with them in their own  
 country although they do so in Military employ.

VIII. NUGUKOTES.

IX. Comprise Newars and Jaices, who enlist in the army,  
 intermarry in their own castes which are very numerous. They are  
 the original inhabitants of Nepal, and were subdued by the Rajpoot  
 races who entered the country about the middle of the 14th century.  
 On the Goorkha conquest, their king was dethroned and their cities  
 Katmandoo, Newar, Patun, Kurtapoor, Bhâalgaor, taken from them.  
 They are by trade Bunniahs and Weavers—the Jaice caste is their  
 priesthood. There are several inferior castes among them who do not  
 enlist, as the

“Bandhu” workers in brass.

“Dholea” Kahars of the country.

“Pooreea” Sweeper or Mihter caste.

VII. DEMATES.

X.—Are by trade, musicians and tailors, they  
 Inferior castes who do enlist. are of low caste and enlist freely.

IX. KAMEES.

XI.—Are blacksmiths by trade they enlist under the name of  
 “Lohar.”

X. SARKIE.

XII. Are bootmakers, workers in leather, and manufacturers of  
 handles for “Kookries,” &c.

KHAWAS.

XIII.—This caste has not yet been mentioned, nor has it been  
 entered in the Table, although there are many re-  
 Khawas. presentatives of it in Military employ. Formerly in  
 Nepal slaves were bought and sold to a great extent, but the custom  
 has lately been suppressed by the Nepal Government.

"Khawas" are the offspring of slave mothers who either marry on contract an intimacy with some one, either Thakoor, Khus, Muggur, or Goorung; the children of this union become "Khawas" and their posterity retain the name. "Khawas" mostly come from the large towns. "Khawas" is the name given to the illegitimate offspring of the king or Royal Family and many Khawas claim the distinction of being so descended. They, however, mostly spring from the amours, or marriage of some of the Court retainers, or soldiers with slave girls kept as attendants on ladies of the Royal Family and women of noble birth.

The slaves in Thakoor, Khus, &c., families who have children from other retainers of the family are called "Ketis" and their children sons "Khetus," Daughters "Kheties," or Koomaras, Koomarees.

It is also customary for a Debtor to give his son to his Creditor as a servant as a security until he can pay the debt. While in this state of servitude the son is called "Bündhûâ."

XIV. 11.—"Thukallees" like the Dooras came across the Himalayon range, but from the direction of Bhôtan, and employ themselves similarly.

Inferior castes who do not enlist.

12. "Koomallees" are traders, their chief occupation being the manufacture of earthenware (ghurras, &c.)

13. "Durhaies" are wood cutters, laborers and coolies.

14. "Manghies" Boatmen and laborers.

---

*IV. General Remarks on the preceding Chapter. Notes on Recruiting, Equipment, Dress, Cooking, Messing, and Canteen Systems, and Pay.*

It will be seen from the preceding Chapter, that the classes from which we receive men into our service are varied, and present many differences and peculiarities—and generally, that the "Muggur" and "Goorung" tribes present the most marked Goorkha characteristics, and from their not having intermixed with the Rajpoot and other races, have not imbibed caste prejudices, and retain their robust physique and Bhôt physiognomy. On the whole it may be said, that although Hindoos, the observances of their religious rites are not rigidly attended to, by them and although the mistaken and injudicious idea widely entertained, that Goorkhas have no caste, is incorrect; yet, they may fairly be said to be about the least prejudiced of any Asiatics of their persuasion, serving under the British flag.

General Remarks.

*Notes on Recruiting.*

1. In Section XXXI. Para.-15 of the Bengal Military Regulations, and in subsequent orders it is laid down, that particular "care is to be taken to preserve the nationality of Goorkha Regiments"—and before entering on the question of Recruiting, it may be as well to note the actual composition of Goorkha Corps at the present time.

As under the present organization, Regimental Commanding Officers are constantly being changed and often obtain the charge of regiments without having had any former experience or knowledge of them, it would be advisable for Government to lay down the exact class, and caste, and proportion of each, to be entertained in Goorkha Corps.

2.—Line Boys the offspring of purely Goorkha parents and those of a second generation of mixed marriages with hill women, have got into Goorkha regiments in large numbers.—Their claims to be provided for in the service are undoubtedly very great, as Government has always encouraged Goorkha Colonies, and their fathers and grand-fathers having in many cases been all their lives in the British Service, they have no other home than the regimental lines. In the first generation their physique does not probably deteriorate much, but in the second and third, it invariably does so materially. They are generally very intelligent and full of Military ardour, and should be enlisted under the conditions laid down hereafter.

3.—In the three Senior Goorkha regiments for various reasons, numerous hill men were enlisted some twenty years ago, who had no pretensions whatever to be considered Goorkhas, these of course have been, and are being gradually eliminated, and as much more attention has been paid of late years to recruiting the "us Goorkha," it is probable the service possesses at present, more of the real element than existed at any former period, and it will, if the same attention is paid, still increase in this respect.

The Dhoteals to whom notice has been made above though very inferior as a class and looked down upon by the real Goorkhas, abound in some regiments; and in several corps, Gurwallees, Sirmoor, Bughut and Mundhee, men, and Kamaonees exist though in comparatively small numbers.

These classes, particularly the three last mentioned are very inferior in physique and courage to Goorkhas and are moreover greatly imbued with caste prejudices therefore no men of any of these classes



should be entertained on any account whatsoever in Goorkha regiments.\*

How Goorkha Regiments should be recruited.

4.—“Muggurs” and “Goorungs” are as a rule not sufficiently intelligent to carry on the staff duties of Regiments such as Pay Havildarships, &c.

For this and other reasons, the enlistment of some of the more intelligent classes becomes necessary, a percentage of Line Boys, and of the Khus class, should therefore be entertained. The Thakoor and Khawas classes also, provide some fine recruits, but in all these cases the men

\* A table of their classes and Caste names is annexed.

| DHOTO NEPAL.           |                          |                                                                                           |                                                                                                                                                                                      |
|------------------------|--------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bramins—               | ...                      | Pandhea<br>Upadhea<br>Patuk<br>Punt*<br>Puneeroo<br>Uppettee<br>Jaice<br>Bhist*           | Thakoor—<br><br><br><br><br><br><br><br><br>Sahie<br>Mull*<br>Chui d*<br>Kowar                                                                                                       |
| Khus—                  | ...                      | Dewar<br>Bogtie*<br>Kowar*<br>Kunka*<br>Bokha*                                            | Khatee*<br>Saroun<br>Bundaree*<br>Bhora*<br>Thappa*<br><br>Bhut*<br>Raol<br>Ketait*                                                                                                  |
| GURWALL.               |                          |                                                                                           |                                                                                                                                                                                      |
| Bramins—               | ...                      | There are several, the principal “Surowla”                                                |                                                                                                                                                                                      |
| Chuttries—             | ...                      | Muhara*<br>Bundarie*<br>Roat*<br>Rumola<br>Chuhan<br>Negie*<br>Sughan<br>Gosam*<br>Bhist* | Ketait*<br>Khuttrie*<br>Dublan<br>Bohra*<br>Runa*<br>Rotela<br>Karkie*<br>Khatee*                                                                                                    |
| Lower Castes—          | Thumeltee, Lohar, Koles. |                                                                                           |                                                                                                                                                                                      |
| KAMAONEES.             |                          |                                                                                           |                                                                                                                                                                                      |
| Bramins—               | ...                      | Jaice<br>Tewarie<br>Patuk<br>Bhist*<br>Punt*<br>Hurbola                                   | Bundarie*<br>Bhist*<br>Raot*<br>Negie*<br>Muhara*<br>Bohra*<br>Karkie*<br>Rugowa<br>Ketait<br>Chuttries<br>Sing*<br>Punt*<br>Sahie*<br>Naique<br>Sawun<br>Gosain*<br>Khawas<br>Muan* |
| GUNOOR-BAGHAT.         |                          |                                                                                           |                                                                                                                                                                                      |
| 1. Bramins             |                          |                                                                                           |                                                                                                                                                                                      |
| 2. Rajpoots or Meeans* |                          |                                                                                           |                                                                                                                                                                                      |
| 3. Kenaits*            |                          |                                                                                           |                                                                                                                                                                                      |
| 4. Kollees*            |                          |                                                                                           |                                                                                                                                                                                      |
| MUNDHIE.               |                          |                                                                                           |                                                                                                                                                                                      |
| 1. Bramins             |                          |                                                                                           |                                                                                                                                                                                      |
| 2. Rajpoots*           |                          |                                                                                           |                                                                                                                                                                                      |
| 3. Kenaits*            |                          |                                                                                           |                                                                                                                                                                                      |
| 4. Khultnes }          |                          |                                                                                           |                                                                                                                                                                                      |
| 5. Borahs }            |                          |                                                                                           |                                                                                                                                                                                      |
| 6. Kollees }           |                          |                                                                                           |                                                                                                                                                                                      |
| Bunn eshs              |                          |                                                                                           |                                                                                                                                                                                      |

This does not pretend to be a complete list, but shows the classes of which representatives may be found in the service, the names marked with an asterisk are those most likely to be met.

should be picked. The following proportion would be found to answer well in all respects and should be strictly adhered to.

- |                                         |                                              |
|-----------------------------------------|----------------------------------------------|
| At discretion of<br>Commanding Officer. | 1. Ten per cent Line Boys.                   |
|                                         | 2. Ten per cent "Khus," "Thakoor," "Khawas." |

|             |                                          |
|-------------|------------------------------------------|
| Imperative. | 3. Eighty per cent "Muggur" and Goorung. |
|-------------|------------------------------------------|

With regard to Line Boys they should be entertained with due regard to their claims, and every care should be considered on its own merits, and every consideration shewn to the sons of men who have served and died in the regiment. But on no account should any individual be entertained who is not physically capable and up to the Regimental Standard. In the "Kas" Thakoor and Khawas castes careful selection should be made. In the "Khus."—Thappas, Booratokees, Ghurtees, Rawas, Karkies and Busnarts would probably be found to be the best style of men and in the Thakoor class Mulls, and "Satries."

With regard to the Muggur and Goorung classes, no difficulty would be experienced in securing fine men of the Regimental Standard.

|                       |                                                                                                                                                              |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Regimental Standards. | Stature for other classes not under 5 feet 3 inches.<br>Chest Measurement, 34 inches, for Line Boys should they be young and give promise of filling out 32. |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                               |                                                                                                   |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------|
| Nugurkotees and Newars not to be entertained. | No Nugurkotes should be enlisted, they are inferior in every respect and are not a fighting race. |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------|

|                                       |                                                                                   |
|---------------------------------------|-----------------------------------------------------------------------------------|
| Sarkies, Demaies, not to be enlisted. | Sarkies should not be enlisted for the reasons given hereafter regarding Demaies. |
|---------------------------------------|-----------------------------------------------------------------------------------|

Demaies, of whom a great number are to be found in Goorkha regiments are very useful as Tailors, and form the majority of the bands in some Corps. They should, however, not be enlisted as Sepoys, but only as Buglers for the following reason—that when once in the ranks they must rise, and ultimately attain to the Non-Commissioned and in some cases to the Commissioned grades. They are in their own country, the lowest of the low, amongst Goorkhas. The other Goorkhas will not either eat or drink with them as shown in the Chapter of Castes, and consequently look down upon them, and experience has proved that the men will not respect them, and therefore, and from their social inferiority, they are unfitted to hold positions of trust.

|                     |                                                                                                                                                                                                                                                                                  |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Formation of Bands. | The other castes should be encouraged as much as possible to enter the regimental bands, and that they will do so, has been proved by the fact, that in some regiments they now form a large portion of the band, although at first it was thought impossible to obtain them. In |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

their own country they did not become musicians and thought it "infra dig" to do so. Like all other Asiatics, Goorkhas will humbug when they can, and they were averse to what they considered an innovation, but now they enter freely as bands men.

5. No other regiments than the purely Goorkha Corps should be allowed to retain or enlist Goorkhas. At present Goorkhas not be enlisted in other than purely Goorkha Regiments. Goorkha Companies exist in some Native Infantry Regiments, and, moreover, Goorkhas are enlisted as opportunity offers under the title of hill men. This is highly detrimental to the regular Goorkha regiments and should not be permitted. Such regiments might be permitted to have companies of Gurwallees, &c.

The best recruiting time is the spring when men come down to the Devee, Patun, Trebenee, Toolsepore, Gorruckpore and other "melás" along the Nepal Frontier—but the best recruits that are obtained are the men that come from Nepal of their own accord to the Head Quarters of regiments to be enlisted or that are brought from the country by their relations from Furlough. These men have seen less of the world, and are more unsophisticated than those who come out to trade and wander, and are likely to stick to their regiments and make good steady soldiers.

7.—A General Recruiting Depôt for the Goorkha Regiments was established in 1858, but was abandoned a year or so afterwards. Should the system be re-established, it would be absolutely necessary to select an officer for the charge of it, thoroughly acquainted with the castes, customs, &c, of the race, as otherwise, all sorts of Dhoteals, Gurwallees and inferior races would creep in, the officer selected should also have some knowledge of "Goorkhallee" and be perfectly free from any regimental bias.

It is, however, very doubtful whether the system of a General Recruiting Depôt would answer for the following reasons.

1st.—That a large recruiting Depôt might awake the jealousy of the Nepal Government, and cause them to put greater difficulty in the way of recruiting, to which there are sufficient obstacles at present.

2nd.—That the Goorkha is a suspicious sort of individual and likes to know exactly where he is to go, and generally has a predilection for some particular corps in which he has relations and friends.

3rd.—That sufficient recruits can be obtained under the present system, and it is probable that Officers Commanding Regiments would prefer entertaining their own men.

*Equipment.*

1. The subject of equipment is one that depends on Imperial Policy, but as Government have lately armed Goorkha, and other regiments with Enfield Rifles, an improved weapon is apparently considered necessary. The faithful services rendered to Government by Goorkha regiments under all circumstances for over 50 years, appears to entitle them to entire confidence. It may be urged that the lesson of the Indian Mutiny and the implicit trust placed by Officers in their regiments then, should render us cautious how we again indulge, in a thorough belief in the fidelity of any Asiatics, but the case of the Goorkhas offers no parallel. An alien race voluntarily expatriated, and many of them only knowing of their country as the place from which their parents came, and having no ties with, or sympathy with, and in many cases detestating the other races of Hindoostan, they are naturally drawn to their European Masters and assimilate themselves with them. This feeling and dependence should be strengthened by making them understand they are appreciated and enjoy the confidence of their rulers, in order further to attach them to our interests.

Goorkha Regiments should be armed with the Snider Breech Loader. Snider Breech Loader. der a first rate weapon, and at the same time so simple in its arrangements, as to be easily understood and managed, by the least intelligent individual amongst them. Arguments indeed might be adduced to prove that the Breech Loader is the safest weapon to put in the hands of all native soldiers, as they cannot replace the ammunition, and without it the weapon is useless, but such discussion does not come within the scope of this paper.

The Goorkha's national weapon is the Kookry, this weapon which he is always expected to appear on parade with, Kookries. clean, and serviceable, is yet by a strange anomaly supplied by him from his private resources, although the frog by which it is attached to his waist belt is provided by Government. He is constantly employed in jungly and forest country, where the kookry is brought into daily requisition, and although compensation is occasionally granted him when it is injured, it appears only just and fair that this part of his Equipment should be either supplied to him by Government, or as this might be inconvenient, that he should receive an annual allowance in lieu. Two rupees per annum would be a fair amount for this object.

*Dress.*

The Dress of the soldier is a subject that has lately been attracting a considerable amount of attention. In the opinion of the writer of these notes, Europeanizing the dress of the native in general, is a mistake, and regiments should be clothed, in as near an approach to their national costumes as could be managed; but the Goorkha's national dress does not allow of being modified in this manner.

Their great imitation of European costume makes it evident that such is the dress they prefer as an uniform, and perhaps the present zouave uniform is as good a dress as could be devised for them. With regard to the head dress, although the Pugree is the best for Natives and most suitable to a tropical climate ; yet, as it is not the national one of Goorkhas, who, moreover, do not understand how to tie or fasten it properly, and prefer the kilmarnock cap they at present possess, to any other description of head gear, that part of their costume may as well be left untouched. Canvass gaiters should however be substituted for cloth ones, they stand wear better, are impervious to thorns, waterproof, and generally preferable.

With regard to the shoeing of the soldier however (a most important item) a radical change is undoubtedly expedient. The Goorkha likes an ammunition boot and strange to say, wears it at all times even when in native dress, the average charge at which it is issued to him is from 1/8 to 1/2, and as many men get through, two, and even up to four pairs of boots in the year, it becomes a heavy item in their expenditure. Such boots as they receive, and wearing them as they do without stockings, which they cannot afford to provide, invariably produces sore heels and galls of various descriptions, and places many of them on the inefficient list. They should be provided with a shoe with a thick projecting sole of soft native leather, something similar to the boot advocated by "Common Sense" in the May number of this Journal, but with projecting tongues rising well over the instep, and high up the heel for the gaiter to fit over. No blacking to be used. Efficiency is certainly more important than mere appearance, and this description of shoe would certainly be more serviceable under all circumstances, and cost but little more than half the price of the ammunition boot.

A Free "Kit" on enlistment should be granted to all Native Soldiers, and more especially to Goorkhas, who are as a rule, perfect paupers, when they are entertained, and being men who live less frugally than many others, get into debt in consequence of the heavy payments they have to make as recruits.

Every Goorkha soldier should be provided with a "Neemcha" every three years free of cost. These coats were found extremely useful by regiments at Umbeylah and elsewhere. Goorkha Regiments are located in colder climates than other corps, and are constantly liable to be sent on frontier service, and require a warm coat of some sort on such occasions, the present cloth tunic being no protection whatever from the cold.

#### *Cooking, Messing, and Canteen Systems.*

The Goorkha is a domestic individual, and naturally likes eating with his family, they are very averse to the cooking system, and it has only been adopted in one regiment where it answers very well, but is only partially used in canton-

ments. Goorkhas of one or more castes will eat together and on service will club their cooking utensils making small Messes. No difficulty has ever been found in the many expeditions that the regiments have participated in. It would, therefore, be very injudicious and dangerous to force an innovation of this sort upon them. That there are great advantages in the cooking system is indisputable, and they should be allowed to see this and gradually take to it if they feel inclined, in this manner they have adopted the use of "Pukkhals" and other things they at first did not at all like the idea of.

Canteens should be granted to every Goorkha regiment. As Goorkhas will have liquor, it is certainly better that they should be supplied with a wholesome spirit at a fair cost, and from the profits of which a regiment fund is accumulated, than driven to search for liquors in the district or distil it themselves. Where a Canteen is established every man should be obliged to drink at the "Tub" and the tots should be moderate, as otherwise the liquor would be too expensive for them. The custom of letting Native Officers take spirits away should not be permitted; they should be allowed two "tots" a day and no more. They cannot be trusted with larger quantities, not being men of education or able to restrain themselves.

#### V. *Proposed Establishment.*

1.—Although it would be impossible to raise many Goorkha regiments, and probably Government would not desire greatly to increase the force, yet it would be feasible if the "restrictions to other regiments recruiting Goorkhas advocated in these pages" were enforced to raise a few more regiments; but should such increase ever be desired, a plan preferable in many respects would be to raise the strength of the existing regiments, as thereby the establishment of European Officers would be economized, and for other reasons which will be found further on.

Present strength. The present strength of our Goorkha Force, is 5 Battalions with 712 of all ranks per battalion, Total 3,560.

Should an increase of the Force be desired. I would propose to form them into a Goorkha Rifle Brigade as follows:—

- 1st Battalion G. R. B. from the present 1st G. L. I.
- 2nd Battalion G. R. B. from the present Sirmoor Rifle Regt.
- 3rd Battalion G. R. B. from the present Kamaon Battalion.
- 4th Battalion G. R. B. from the present 4th Goorkha Regt.
- 5th Battalion G. R. B. from the present Hazara Goorkha Battn.
- 6th Battalion G. R. B. to be newly formed.

There would thus be six regiments of 8 Companies each, and the strength of each corps, should be 16 Native Officers 80 Non-Commissioned Officers 16 Buglers, 800 Sepoys,—Total 5,472.

The present establishment of Native Regiments is I submit too small, they have frequently to furnish many detachments and guards, the consequence being that on occasions they present the appearance of cadres rather than corps.

In carrying out such a scheme, advantage might be taken when raising the new corps, and adjusting the others, to equalize the promotion of the several regiments.

The Senior corps have, owing to their being so long conducted on the seniority system, men in all grades of very long service, worn out and inefficient in consequence, who might be eliminated, or distributed, on an opportunity like the above with little expense, inconvenience, or detriment to the state. In these days when modified drills and improved fire arms, necessitate a greater amount of intelligence in the Native Commissioned and non-Commissioned Grades, it is essential to those, in these positions, in full possession of their faculties, smart, efficient, and capable of imparting instruction.

2. "Esprit de corps" amongst Goorkhas is very high, and these regiments take great mutual pride and interest in each other therefore giving the force a special title such as the "Goorkha Rifle Brigade" would tend to strengthen this feeling. Should the old system of Officering the Army be again resorted to, these regiments might be grouped in two Battalion corps, and promotion managed in them as in the British Service.

3.—I heartily coincide with and support the views, advanced by Major Cory, B. S. C., in his lecture published in the July number of this Journal and believe, that a return to the old system of officering the Indian Army is alike advocated by Military opinion, experience, and the practical experience of all our late campaigns and expeditions. In case of a great war we have no reserve of young officers to supplement the present deficient organization, and shall never have a reliable one till we resort to the old system of Indian cadetships, an arrangement, which ensures efficiency, encourages "esprit de corps," and is politically expedient. Pending such re-organization an European Officer at least per company should be appointed to all native regiments.

4.—It is generally agreed amongst Military Officers who have considered the subject that the system of putting Native Officers as Captains of Companies, Native Officers in charge of companies is a faulty one, and does not stand the test of service. There can be little doubt that the Native Officer is totally unfitted by his antecedents for the charge, in positions where presence of mind and prompt action is required, his judgement fails. Raised from the ranks and having relations amongst the lower grades, and having no education, he is not sufficiently separated from the rank and file to ensure their respect. He is, moreover, generally of an age when any

abilities he may possess are failing under the pressure of mental and physical decadence.

It has been suggested with regard to the Native Army, that the Native Aristocracy should be induced to enter the ranks as Officers. But this plan is open to, the insuperable objections ably represented in Major Cory's lecture previously alluded to and with regard to Goorkhas is out of the question, as individuals of such status are not available. It would therefore appear to be absolutely necessary to place a sufficient number of European Officers with each native regiment, but that the plan of their being permanently posted to corps, instead of being temporarily attached as necessity requires, being preferable, seems indisputable as it is evident in the latter case, they can hardly be expected to have the same amount of zeal, interest, &c., in their regiments.

Goorkha soldiers delight in many Games, putting the shot, football, cricket, &c., Some small assistance from Government in the shape of gymnastic apparatus, and the occasional visit of an instructor would be a great boon, and the men would readily take to athletics.

The views of several Officers of the longest experience and most intimate knowledge of Goorkhas, whom the writer of this article has had the opportunity of consulting, coinciding with his own on the most material points, he has less diffidence in submitting these notes as the result of his observations in a service of 15 years as a

GOORKHA.



## III.

**On the training of the Staff in India.**

EVERY one is alive to the necessity of giving the officers of our army in India a practical military training, including such technical knowledge of the science of warfare as officers aspiring to employment on the staff should be acquainted with, and yet no decided step has been taken to afford such opportunity, or to encourage the officers in India to devote a portion of their time to the study of a profession which day by day becomes more scientific, and consequently requires constant study to keep pace with the onward march of improvement.

The only road open for the acquisition of such knowledge is the Staff College in England; the competitive examination necessary for admission, together with the number of useless subjects, debar many efficient officers from entering the College, and thus the gates of knowledge are closed against them, and they remain in many cases profoundly ignorant of the commonest principles of war, reduce the standard of efficiency of the army, and when required to act, and promptly, they have not that confidence in their own abilities so requisite for a Staff Officer, an accomplishment only to be gained by the knowledge of theory combined with practice.

An officer of the Indian army is at present totally debarred from any chance of studying the science of military warfare? According to the existing regulations, he is unable to enter the Staff College, or at least finish his course of study there. Even if an officer is willing to devote his furlough to this study, he cannot obtain leave to finish his course at the Staff College, and yet it is said that our army is not efficient, and our officers are unacquainted with their duties! We have officers in India holding staff appointments, men who will some day command our armies, hold the safety of India and the honour of England in their hands; men who, no doubt, have been chosen for some "specialité" in their character, which pointed them out as men likely to make efficient Staff Officers, and yet what special training have they undergone to qualify them for their positions? It is true they may have been capital regimental officers, are now good horsemen, energetic, and love their professions, no mean recommendations, but something else is required for the formation of a good Staff Officer. I am not at all an advocate for a man being entirely a theorist, but yet I hold that every man holding a staff appointment, should, in addition to his having a good seat on a horse, also have a clear head, know something of the theory of his profession, be acquainted with those principles which should guide Generals in their campaigns, and finally, be a man of such character that, when necessary, his juniors could look upon him as a man well versed in his profession and every inch a soldier; they would

E

thus carry out his orders with that cheerfulness and confidence so necessary for the completion of a movement by an army. Formerly, our officers had time to acquire this knowledge during a campaign, but the time has now come when our Staff Officers must go into the field with no slight knowledge of their profession, and more particularly of the duties embraced by that portion of the staff to which he may belong; opportunities are not always offered to give the staff officer that experience which is so valuable on active service; but if that experience has not been acquired on active service, it should at least be extended and improved by the experience of others.

To give our officers in India, and more particularly those of the Indian army, an opportunity of acquiring that experience under the superintendence of men who have devoted their time to the acquisition of such knowledge, would seem to be the duty of Government; no doubt, difficulties are in the way, but surely not of such dimensions that they could not be cleared away after a very short deliberation on the part of our experienced leaders.

Why should we not have a Staff College in India to supply that great want which is now felt, and will be more so when the time comes to demand all our talent and trained men to lead our armies to victory, and prove to our enemies that we have not been idle during years of peace, nor carried away by the absurd idea that there will be no more war.

There seems to me no reason why such an establishment should not be started under very favorable auspices, and that without very much delay. Such a College, or rather course of study, might be founded with such a small outlay, that it is improbable the Government would complain of the expenditure, when compared with the material advantages which would accrue to them.

My ideas are as follows :—

The course of study should be carried on in the Thomason College, Roorkee; the students would, of course, be under the command and immediate superintendence of the Principal of the College, who, being himself a Royal Engineer, could bring to bear upon the course of study such knowledge and scientific attainments as might be required for the education of the future Staff Officer. The present staff, of Royal Engineers, of the College would, of course, be increased to supply the demand, which, with the addition of a Professor of Military History, would be all that is necessary to establish a regular course of study at this College.

At the present time there is a class in existence founded by Colonel Medley, R. E., for the study of military surveying and military engineering, open to officers of all services. Why should this course not be extended so as to be equivalent to that of the Staff College at Sandhurst?

This course should be divided into two distinct parts, and yet it should be so arranged that the first division would be in itself complete, and at the same time form the first part of the second course.

At the termination of the first part of the course, an examination might be held, selecting those officers who display either ability or desire to proceed with the second part of the course; such desire, of course, being ruled by the result of the first examination.

Those officers who go through the whole course being alone eligible for Staff appointments, the facilities afforded by the establishment of such a course of study at Roorkee would be enhanced by the fact of its being the head-quarters of the Sappers and Miners. Here the future Staff Officer would have PRACTICAL instruction in pontooning, the erection of field works, temporary bridges, &c. In addition to this, there are qualified officers in the Royal Engineers to instruct in army signalling, field telegraphy, &c. Provided the course of instruction laid down be purely practical, for which there are peculiar facilities at Roorkee, I venture to say that qualified staff officers would be yearly turned out equal to those who have gone through the Staff College at home.

The advantages offered by dividing the whole course into two parts, are,—that by doing so a number of officers, who either from inability to go through the whole course, or want of desire to undertake the duties of a staff officer, would, nevertheless, rejoin their regiments capable of performing a task which may at any time devolve upon a regimental officer, such as traversing a road, sending in a comprehensible sketch and report of an outpost or advanced position, or throwing up a breast-work, &c.

The officers undergoing this course of instruction should be recommended by the Officers Commanding their regiments, and also the General of their brigade or division, thus acting upon the principle, that to be an efficient officer of the Staff, you must also be a good regimental officer. The efficiency of an army must naturally be increased in proportion to the number of trained officers in it. Such a training as I have ventured to recommend gives an officer confidence in his own powers to act; and this confidence infuses itself in a marvellous way among the men under his command, and causes them to work willingly, knowing that their work will not be in vain, and thus a spirit of respect is engendered among the soldiers for their officer, not merely because he is above them in social standing, but also because he is their superior in attainments.

The utility of having such qualified officers cannot be defined. They would, in many ways, assist in relieving the Staff of the burden of their duties on active service, and thus enable them more completely to perform the more important duties falling to their lot.

The number of officers who yearly apply for permission to go to Roorkee prove that there are many officers in India who do not consider it a bore to make themselves acquainted with the useful parts of their profession.

Facilities also abound in this country, even more than in England, for the completion of the education of the future Staff Officer, and giving him a final polish before pronounced fit to be the commander of others, and one to be looked up to in the hour of danger. There are many stations in India, which are garrisoned with all arms of the service, where officers of Artillery, Cavalry and Infantry are constantly thrown together; but in how many is any advantage derived from it? And yet, here is a chance for the Cavalry and Infantry officer to become acquainted with the more scientific arm of the service; the Infantry officer to become familiar with the movements of Cavalry, and in the same manner, the Cavalry officer to study the mode of handling Infantry; finally, all who aim at employment on the Staff may take advantage of the fact of being stationed with native troops, to become better acquainted with their ideas and the internal economy of native regiments. After an officer has served three years with his own particular branch of the service, he ought, I think, to be more encouraged to study a little regarding the other branches of the service. This is a most important point in my idea, and one sadly neglected, for I believe it to be a fact that officers of one branch of the service are generally ignorant of everything connected with the other branches.

What is to prevent an officer in an Infantry regiment from occasionally attending the riding school of a Cavalry regiment, and afterwards being present at its parades, until he had a fair idea of what a Cavalry regiment can do, and should be likely called upon to do. I am sure no Commanding Officer who was proud of his regiment, or had the interest of the service at heart, would do anything but encourage such a young officer who was anxious to enlarge his ideas with regard to the other branches of the service. After an officer has passed his qualification examination, for promotion to his company, or troop, he might be very well spared occasionally from parade, to attend the parade of another arm. Of course, such permission would be limited to those officers who had previously passed through the before mentioned course qualifying him for employment on the Staff. This mode of dealing with such qualified officers would give the Infantry officer the advantage of becoming a fair horseman, without establishing a special school for the purpose, and also officers belonging to the several branches of the service would have the opportunity of thoroughly understanding the other branches, without in any way neglecting their regimental duties. In my humble opinion, an officer either at home or abroad, has too little encouragement to study his profession, and acquire that knowledge which every man who calls himself a soldier should possess. I think that every officer who is qualified to hold a Staff appointment, and has never held a permanent one, should, in

order to encourage officers to become so qualified, receive some small addition to their pay, say thirty rupees a month, for all ranks. By carrying out the rule of selection, and only permitting officers of over three years' service to enter on the course of study, limiting the number to one from each regiment, and also by limiting the number permitted to study at the same time to a certain number, there could seldom be more than one officer so qualified to draw the additional pay, and if there were more, so much the better for the service. Let regiments be called upon to send an officer to go through the course in rotation, say according to the order in which they come into the country. By some slight inducement of this sort, young officers in regiments, who now waste away their time, would be induced to devote a certain portion of it to the study of their profession. Very little inducement is required to make a man read in India. He is shut up all day, and unless he is a man gifted with many resources in himself, he is so overcome with *ennui* before the sun goes down, that he becomes disgusted with himself and everything else; if he had some incentive to work, something to gain by study, and an object to look forward to, I think there would be no want of officers anxious and willing to study.

Here and there a student of the science of warfare may be found, but very few persevere long, as they not only have nothing to gain by study but self-satisfaction, but also they in many cases excite a spirit of envy among their brother officers, as of course if one or two officers know a little more about their profession than the others, the ignorance of those who have no desire to learn becomes more apparent. In order to give those officers a chance of acquiring an insight into the duties of the various branches of the Staff, I consider that, when practicable, such a qualified officer should be attached as assistant to a Brigade Major or Deputy Assistant Quarter-Master General; during this time he would materially lighten the duties of the Brigade Major, and also qualify himself, more or less, in those duties; in addition to this, his qualifications would be called into play, and it would soon become apparent to the General of brigade, or division, whether such an officer would be likely ever to make a good Staff Officer or not; he would be no additional expense to Government, would carry on his regimental duties, and in fact serve a sort of probation, and undergo certain tests, before being finally appointed to a permanent position on the Staff. In order to complete this scheme, I would suggest that instead of making the Adjutant of a regiment or some other regimental officer undertake either the duties of Brigade Major or Deputy Assistant Quarter-Master General, which is frequently done when the General is on a tour of inspection, some *qualified officer* in the regiment stationed at this particular place, should be chosen to carry on these duties during the absence of the Staff. The duties would be performed in quite as efficient a manner—in fact, I should say more so, for in one case the Adjutant of a regiment has generally enough regimental work to occupy his time, without being also burdened with station or divisional duty; and in the other, the qualified officer, whose ambition would be to gain

an appointment on the Staff, would seize this opportunity of becoming acquainted with its duties, and perform them with zeal and energy. I would also suggest that, as a boon and by way of encouraging officers to become so qualified for Staff appointments, the post of Station Staff Officer should be held only by such qualified officers.

It is common to see an officer, after he has served ten years in the Army, and more particularly if such service is spent in India, become unfitted for any other line of life, but the routine of regimental duty, to perform which he is not called upon to exert any extraordinary amount of intellectual ability; he becomes narrow in his ideas, and fails to look upon things in the light of other men. And why is this? simply because, during these ten years, he has never been called upon to exercise judgment, his mental faculties have remained dormant, and have not had that constant exercise so necessary to constitute a man of ability, in whatever profession he may seek advancement; he knows he has a certain ordeal to go through, certain duties to perform, a certain time before he can get promotion, which must come sooner or later; he goes through his duties, consequently, in a reconciled way, and too often performs them just well enough to escape correction; he lacks that fire and zeal in his profession which is so contagious, that a zealous and energetic officer can easily command the respect and love of his men, simply because he imparts this desire to do well to his men, and a sympathy is established which works wonders.

Take an officer, who performs his routine of duty in this matter-of-fact way, and place him in a position requiring decision of character, resolution of purpose, and where is he? at sea!—completely at sea; he shirks responsibility of the most trifling description, and is little better than a machine, as far as his practical knowledge is concerned. To give a case in point, I remember an officer answering to the above description, a subaltern of twelve years' service, being called upon to perform the following feat of arms. The regiment was in column when the General rode up; and he called upon this officer to take his company and feel for the enemy to the right, under the supposition that the regiment was a column, the night pitch dark, the country unknown, and the enemy somewhere near. The column was to remain stationary until his return with the party. He promptly fixed bayonets, marched the company off to the right in fours, and having gone about a quarter of a mile, he extended them in skirmishing order. It never struck him that without some chain of communication he could never again find his column, at least not until dawn would show him in what a situation he had placed himself; when re-called, the only excuse he offered to the General was that "he had never been on active service;" he could not understand that it was desirable he should know a little about this sort of thing before entering upon a campaign.

I do not think that officers should be allowed to have more than one tour of Staff duty, but when selected for Staff employ they should

be struck off the strength of their regiments immediately on appointment, and having satisfactorily performed the duties of Staff Officer, should be then re-appointed to a regiment, receiving as a reward a step in rank. Many would look upon this as unfair to officers senior to them in the service, for, of course, such an officer would supersede many who were originally his senior; yet it is the efficiency of the service that should be studied, and not the individual interests of any particular officer, and after all, every officer would have an equal chance open to him, provided the process of selection was always carried out with indifference to an officer's interest, service, or anything else but *superior ability*. It is but fair that those officers who do not consider it worth their while to devote themselves to the study of their profession, should suffer, and those officers who do study, to qualify themselves for, and afterwards perform the arduous duties of a Staff Officer for five years, should have some reward, and there is no reward which the soldier so values as promotion. Why should an officer who has proved himself capable of performing the duties—the important duties—of an officer on the Staff, be brought back again to serve in his regiment, under men who are infinitely his inferior in the qualities which constitute a good soldier? But before being finally appointed to the staff, and thus gaining all these advantages, an officer should be obliged to go through a more fiery ordeal than at present; he should, during a certain period of probation under the eye of a General, show his peculiar abilities which adapt him for an appointment on the Staff, for the Staff Officer should be a man who not only commands respect for his superior attainments, but have that art of ingratiating himself into the hearts of those under him, that his inferiors may serve him not only for respect, but also for love of him individually. The same remarks apply to regimental Staff appointments. The Adjutants and Musketry Instructors of regiments hold, I submit, their appointments too long; five years is quite long enough; at the expiration of that time, the work becomes monotonous, and an officer loses much of the interest in his duties, although he may perform them well; and the short system holds out a hope to the younger officers, of one day being appointed to one of these situations. By thus changing the Adjutant every five, or, as I would prefer to see, every three years, you would have in each regiment a number of officers, who, having performed the duties of Adjutant for a certain period of time, would have acquired a thorough knowledge of its management, and this would tend to increase its efficiency, not only by the superior knowledge thus gained, but also by offering an inducement to junior officers to show themselves energetic, and well up in their work.

Camps of exercise will, if continued, no doubt have the desired effect of bringing out the latent talent of officers, and give those qualified to hold Staff appointments a chance of showing their ability. Generals will also be enabled to test the officers in their command, who may have struck them at various times as officers of ability, and likely men. Generals of divisions too often know very little of the qualifications of the

various officers in their division or brigade. A General should know the powers of the officers in his division, almost as well as a Commanding Officer of a regiment; and until such is the case, it will be impossible to select those officers whose merits point them out as superior to their brother officers, in possessing those qualities so necessary to form a good Staff Officer.

By attaching an officer to his Staff, during a camp of exercise, a General has every facility for making himself acquainted with his character, and having satisfied himself that he will make an efficient Staff Officer, his report should be made to head-quarters accordingly. A roster of such officers being kept, the Staff should be supplied only from such officers.

Another point overlooked in selecting Staff Officers arises from the too frequent ignorance of the habits and customs of native troops. Many officers receive appointments on the Staff, who are totally ignorant of the ways of native troops. I consider that every officer qualifying for Staff employ, should spend at least six months with a native regiment: this is of vital importance, for in many cases where a General is not particularly well up in the interior economy and working of native troops, he, of course, relies upon his Staff, who in some cases must be as ignorant as himself.

We all look to the Staff for information, guidance, and assistance, and it stands to reason, if we lose faith in that Staff as the connecting link between the ruling mind and his subordinates, things cannot work well.

The present system of work does not tend to turn out an efficient Staff; a certain amount of correspondence is, of course, absolutely necessary in every department, but, at present, the time of a Staff Officer is so occupied by drawing up reports, &c., that he must fail to find time to study his profession.

What we want for Staff Officers are men who are selected not merely for *one* quality, but *all* the qualities essential, and having got such a man, his talents should be moulded into the best form for future development at any required time; not moulded by merely going through a prescribed course of study, but tested by practice of all kinds, at all times, and under all possible circumstances. Unfavourable comparisons may at present be drawn between the efficiency of English officers and those of continental armies; but there is an innate talent, a power of endurance, a capability of command, and an ambition to learn in the English army, which only needs to be encouraged and rightly directed, to yield fruits which need not fear comparison with those of any army in the world.

R. J. MORGAN, LIEUTENANT,  
*Bengal Staff Corps.*

---







## S E L E C T I O N S .

## I.

**Field Operations on the Sylhet and Cachar Frontiers,  
in 1871.**

THE raids which caused such damage to life and property in the villages and tea-gardens of Sylhet and Cachar, during the winter of 1870-71, and the consequent military operations have brought these districts lately into prominent notice; but still there are few people even in India unconnected with them who possess any knowledge of their geography and extent, or of the tribes bordering on their frontier, or their immense importance in a commercial point of view, as connected especially with the vast tea interests involved, both in Cachar, Sylhet, and Assam.

Beyond our frontier too, since Mr. Edgar's residence among the Looshai tribes, a most valuable trade in India-rubber has been opened, which commodity is there procurable to any extent.

The military district, styled the North Eastern Frontier, may be said to be a series of frontiers commencing at its western point at Julpigoree, running through the western Dooars (lately annexed from the Bhooteas) to Buxa, and so to the Brahmapootra at Doobree, thence to Debrooghur and Suddya and then back in a south-easterly direction, embracing the mountainous ranges on the left bank of the Brahmapootra occupied by Abors, Meekirs, Nagas, Cossyas, Jynteeas and other tribes, until our boundary strikes the Munnipoor Raja's state, skirting which is our eastern frontier marked by the Barak River to its junction with the Tipai at Tipai Mookh. This is our south-eastern boundary; beyond are the Looshais, Hoolongs, and other tribes,—utter savages who have constantly committed raids upon our territory, to counteract which the military operations of last year were directed, as also to secure Mr. Edgar and his party's safety, who were then travelling between Bhyparee Bazar and Looshai Hath. From Tipai the line of frontier as last year adjusted with Sookpilall, takes nearly a westerly direction until it strikes Hill Tipperah, and forms the southern frontier of Sylhet.

It is difficult to say which line the Eastern Frontier district takes from Alleenugger, (on the South-West Frontier of Sylhet) but in rough terms, it goes westward towards the Megna, and so round by Dacca and up the Brahmapootra to Doobree, thus completing the circuit. It extends on a rough calculation from Julpigoree in longitude  $88^{\circ} 45'$  east to Suddya in longitude  $95^{\circ} 30'$ , and in latitude from Tipai Mookh  $24^{\circ} 15'$  north to Suddya  $28^{\circ}$ .

But it is more expressly with the Cachar and Sylhet frontier I have now to deal with reference to the operations of 1871.

It was on the 20th January, when travelling with His Excellency the Commander-in-Chief, that I received the first intimation of any anxiety for the safety of our frontier. The Magistrate of Sylhet had applied for troops from Shillong; but as this was a matter of yearly occurrence, much importance was not attached to it. One hundred men of the 44th had marched at a few hours' notice for Sylhet on the 19th, arriving on the 22nd January.

On the 25th, when at Doobree, we received intimation that Aenakhall in the Hylakhandee valley had been attacked and many villagers cut up. On the 28th, telegrams of more serious import were received that several gardens under the Chata Choor range had been plundered, that Mr. Winchester had been killed, and his daughter carried off, with a number of garden-hands, men, women and children the premises burnt and anything moveable stolen; that the raiders were within twelve miles of the sudder station of Silchar, which had been denuded of the only troops in the district for the protection of the more advanced gardens and the relief of a detachment at Monier Khall, besieged in a stockade. A guard of the 4th had also been cut up after a gallant defence (one man only escaping) near the village of Nundegram, not above fifteen miles from Cachar. These details were received by telegram on the 28th January. Lieut. Bourne, who had left with his company for Sylhet, had been pushed on under requisition from the Magistrate with only his ammunition and hospital stores towards Chargola with orders to watch the valleys of the Singla and Langai Rivers. On arriving at Kareem-gunge he received intimation that the outpost of Chargola on the Singla River under the Sylhet slopes of the Chota Choor range had been attacked, and starting with only his ammunition, marched 35 miles between dusk of the 27th, and 9 A. M. on the 28th—no easy task over the swampy plains and forests of Sylhet.

Captain Lightfoot with another company of the 44th on the 28th January, left Shillong, arriving on the 30th at Sylhet; and it was with the following disposition of troops we heard at Gowhatty of what appeared a general rising along the southern frontier of Cachar.

A wing of the 4th was at Silchar and the frontier, a company at Chargola, and one at Sylhet. Half the 4th at Dacca, and six companies of the 44th at Shillong, and five of the 43rd at Gowhatty. It must be remembered that after General Nuthall's return in 1869, it had been decided to defend the frontier by detached parties of police at various points. These points were well-chosen. Monier Khall on the Sonai, Doorbund the centre of a number of tea-gardens, and Jhalna Churra on the Dallessur—the most southern, occupied garden of Cachar—were stockaded and occupied, while here and there in the tea gardens were small police-guards of from ten to fifteen men. They had no roads of communication worthy of the name. The streams being unbridged, were for months impassable, and they only courted attack from their weakness. But the most distressing feature case was Mr. Edgar's being with a small party of police in the heart

of the Looshai country. His whereabouts was not accurately known, and it was felt that the advance of any armed party beyond our frontier might be the signal for their destruction.

The presence of the Commander-in-Chief at Gowhatty was invaluable to me. On the afternoon of the 28th January, I submitted my plans for the defence of the frontier, which received immediate concurrence.

The whole of the 44th were ordered to Cachar; two Companies of the 43rd to Shillong and subsequently to Sylhet; the head-quarters and second wing of the 4th were pushed up from Dacca. Captains Bourne and Lightfoot received orders by telegram to proceed by forced marches with ammunition and food in haversack to Cachar. The great object was to get the men to the frontier as soon as possible. The planters and labourers were helpless; their houses were being burnt; their property carried off; and their garden hands, terror-stricken, fled into the forests and swamps to hide from the storm.

No troops ever answered the call for hard service in a more soldier-like spirit. Capt. Lightfoot received his orders to leave Sylhet on the afternoon of the 1st, and arrived at Cachar, 71 miles, on the morning of the 3rd. Captain Bourne started from Chargola on the 2nd, marched over the Chata Choor range and through dense forest tracks straight into Cachar, arriving at noon on the 3rd, a distance of 40 miles; and, it must be remembered that this was no high road marching. Numbers of streams had to be crossed, perhaps, by the aid of one or at most two cranky little ferry-boats, while the cane-forests and swamps under either side of the Chata Choor range were all but impassable in many places. On the morning of the 29th January, I started from Gowhatty with Captain Thompson for Shillong *en route* for the frontier. I then received orders from the Supreme Government to consider Mr. Edgar's safety my first duty, and that the entire defence of the frontier was placed in my hands.

The head-quarters of the 44th and all available men had started on the day of my arrival at Shillong (the 29th January). They and the 4th N. I. arrived about the same time at Sylhet, a company of the 44th was pushed on to Alleenugger one of the 4th to Chargola to replace Bourne. The remainder of the 44th marched for Cachar, which station I reached on the 7th February. Suffice it that all these movements were made with the greatest expedition, and showed that the officers and men had the service of the state at heart. I began to feel, when I got these detachments to the out-posts, that I had the frontier more in hand, and had leisure to think how I was to get at Mr. Edgar. I could get no guides; all men whose information was reliable were away with him in the Looshai country. The boats, which had been sent up with provisions, had returned twice; the returning raiders had been met on what was supposed to be their homeward track from Byparee Bazar to Looshai Hath, and I confess that it was not with any pleasant anticipations as to a successful result that I sent Captain Lightfoot and Lt. Bourne with an armed fleet up the

Sonai River. At the same time I ordered Colonel Hicks with the remainder of the 44th to start as a land-column for Looshai Hath *via* Bang-Kong, Lemington, and Lang Wahit; Looshai Hath would thus have been reached in about ten days, and although Col. Hicks would not probably have been able to have communicated more than once or twice with the fleet, still it would have drawn off the attention of an enemy. This column, however, did not start, as before carriage could be ready and arrangements made, we heard of Mr. Edgar's arrival near Looshai Hath, and that the river was clear. "Its dogged does it" may be the term to be applied to this river-trip of Captain Lightfoot's. At this season the water was at its lowest; the bed of the river not in many places half-a-dozen yards wide; the stream, a succession of rocky torrents, pools and shallows. Captain Lightfoot's orders were to proceed up to and hang about Looshai Hath until some information of Edgar's safety or otherwise could be obtained. A more unpleasant expedition or, I may say, a more dangerous duty, could not have been devised for or more cheerfully undertaken by officers or men. The bed of the river sunk between high banks, was suffocatingly hot; dense forests on either side came down to the river's bank; half-a-dozen marksmen might have picked off every man, and a log or two moored above and below the fleet would have been inconveniently got rid of. From the 11th to the 20th February when Mr. Edgar was met near Looshai Hath, the fleet was, I may say, literally dragged up the Sonai, for the boats had over and over again to be unladen and lifted over shallows. It was therefore with a light heart that on the 27th I heard of Mr. Edgar's return to Monier Khall, and Captain Lightfoot's on the 28th. Another scene in the drama, and a most important one was over.

In the meantime, the Commander-in-Chief and the head-quarter staff had arrived at Cachar on the 24th February, on the morning of which day we began to hope that the raiders had had enough of raiding, but an express arrived from Jhalna Churra announcing that the gardens had been attacked, that the enemy had been beaten off by the Police, but that troops were required. A party of raiders also had attacked a Kookie village near Alleenugger in Sylhet. They too were driven back with loss, and deprived of their plunder by Captain Robertson's detachment of the 44th and some Police. The tea-garden premises of Lotikhandee had been burnt and plundered about the same time. Captain Williams' 44th marched for Jhalna Churra at three hours' notice, Colonel Hicks with the head-quarters, and the remainder of the corps, starting the following morning. Both reached Jhalna Churra, distant between 70 and 80 miles, in three days. Captain Palmer of the 4th, on seeing the flames at Lotakhandee, marched straight across the Chata Chooria Range, but, meeting Captain Williams, returned to Chargola. This was the last attack of the season. We had not much fighting, but I must say some good marching, and what I may style frontier enterprise.

Immediately after this the question of the future frontier defence

was entered upon. It was decided that the whole force, excepting a small detachment required for station duties, should be thrown well forward to the frontier, and erect at Monier Khall, Dooarbund and Jhalna Churra in Cachar, and at Allecnugger and Chargola in Sylhet, strong fortified posts capable not only of holding a company of sepoy but protecting the labourers and tea-property of the planters; also in constructing roads between these posts. The amount of work done by these detachments was simply wonderful. The 4th, an essentially Poorbeeah Regiment unaccustomed to pioneer-work, seemed to keep up a gallant rivalry with the little Goorkhas of the 44th, who are, I may say, unrivalled in the jungles. In two months these stockades were completed; and though the roads were not finished, good passable fair weather tracks had been cut. To show the extent of these stockades and the work done, I may notice the Jhalna Churra one built by Colonel Hicks and Captain Williams of the 44th; it had a river frontage of three-hundred yards with flanks of about hundred and fifty each with gateways, and stockaded picquet houses, and barracks for one hundred men. Upwards of six thousand trees were felled, brought across the river, and carried by the sepoy to the stockade; besides thousands of bamboos and bundles of grass for the barracks.

This was, I think, the most extensive work, but all were works of great labour, and brought out the qualities of the officers, who one and all worked bravely at it. When completed in April, the three in Cachar were confided to the 4th Native Infantry; the two in Sylhet to the 44th who had also a company in a stockade at Mynadhur beyond the Bhooban range, and one in reserve at Sylhet.

The greatest difficulty I had at first starting was gaining any information from the out-posts and forwarding supplies. The latter difficulty soon righted itself as we had an immense supply of commissariat stores and most of the out-posts had water-carriage near them; but the intelligence department was a far more difficult business. But thanks to the exertions of Mr. Williams, the Deputy Commissioner of Cachar, daks of Munnepoories, mounted on ponies were laid to all the out-posts, but not a man could be got to risk it under three rupees a day for man and pony. Several of the latter were lost and one or two men were killed in this service. Fortunately, the Government had this year undertaken to supply the troops on the frontier with food. The large stores collected at Chuttack were pushed on by water to Cachar and the out-posts; moreover, the planters were most liberal in lending rice, &c., stored for their coolies for the use of the troops; somehow we got on, never starved and seldom wanted. The planters themselves felt that their cause was taken in hand; one gentleman, whose garden was selected for a garrison, said to me, "I've put half a lakh more on its price this afternoon, Sir!" But there were other points of immense value in a strategical point of view besides those actually selected for stockades. The lines of communication in Cachar are so decidedly marked, and the forests between them so dense that it is almost a necessity that any raids must be made down the rivers

on rafts to points where they can rise to the crests of the mountain-ranges along which they travel to the points to be attacked.

The Barak, the Sonai, and Dallessur are the chief rivers of Cachar. Between the two former runs the fine Bhoobun range, over which a track had been cut by Mr. Daley of the police from Monier Khall on the Sonai to Minadhur, a tea-plantation on the Barak. I hardly think this range has ever been made lately, at any rate, the route of any raid; but doubtless in the event of any advance by us on the Eastern Looshai tribes it would be of immense importance to be able to march troops by this route to Minadhur, and commence there the boat-service up the Barak. Provisions for the force would, of course, be sent by boat from Cachar. There would be no difficulty whatever in marching troops in winter over the Bhootan range. The next range we have to do with is the Rengti Pahar, the—so to speak—highway between the Sonai and Dallessur Rivers merging into very low hills spreading out like fingers between Dooarbund and Dhurm Khall (Claverhouse.) Probably this range has been more used for raids than any other, but as we have now strong posts at both the above places, when the track between them is fully opened out, all raiding parties ought to be caught, or at least should not be able to return with booty.

We now come to the Chata Choorra range between the Dallessur River in Cachar and the Singla in Sylhet, and the boundary between the two districts. It was along the crest of this range that the party advanced which attacked Alexandrapoor and the neighbouring garden of Cutla Churra when Mr. Winchester was killed and his daughter carried off, and a guard on its summit between these gardens and the Chargola stockade, holds a most important point in the frontier defence. We have now a good road from Cutla Churra straight over the range to Chargola made by the police. As I was very anxious to inspect it and the position of the guard on the summit, I went there with Mr. Sellar and several other gentlemen. I confess the trip was not a charming one, commencing with about three miles of hollowless swamp teaming with intense malaria: leaches gadflies, and worse than all ticks. Our only passage over the swamp was on bundles of grass used as fascines, by the raiders whose track was well marked by discarded fragments of spoil. The Neer Khall grass rose fifteen feet above our heads; it was all we could do to breathe. Passing this swamp an elephant track was our only road to the summit of the range, where after a six mile walk we found the stockade. The hills around had been well cleared of jungle and we were amply repaid by the magnificent view eastward to the Bhoobuns; and westward beyond Sylhet. The good Sikh Police Jemadar gave us tea and chupatties and lovingly talked of the land of five waters until the lengthened shadows warned us that it was time to retrace our steps to Alexandrapoor by the route we came.

We must now cross the Chata Choorra to Chargola. The road *via* the police stockade was not then completed, but it now is and has been



kept open all the rains, a success not anticipated when the road was first constructed. At Chargola under the western slopes of the Chata Choor range were located two companies, one of the 4th under Captain Palmer, and one of the 44th under Captain Lightfoot who had gone there on his return from the Sonai. The stockade or rather two stockades in echelon were built on the salient bend of the Singla River, a rapid and unfordable stream across which it had been necessary to bring the enormous quantity of timber and bamboos required for its construction. This had also been done at Monier Khall and Jhalna Churra. Colonel Duffin at the former stockade crossed his logs in boats, Colonel Hicks at the latter harnessed elephants to them, while Captain Lightfoot at Chargola built a very pretty suspension-bridge entirely of cane. Besides building the stockade, the detachment had made a very fair road over the Langai range to a large Kookie village which, from fear of attacks, has been several times before and now is deserted. This road will, in the cold weather, be completed by the police stationed at the Langai stockade, and a post will be established on the range.

It has been said that road-making has never been attempted in Sylhet. This I believe to be a mistake; in fact, I know it is, for travelling northward from Langai, are to be seen the remains of a 'bundled' road extending for some distance and in the neighbourhood of Alli Ahmed's Zemindaree near Alleenuggur. Vast sums have been spent by his ancestors on roads and bridges now fast falling into ruins.

It is true that the whole country, barring the ridges is during the rains a vast lake; still I think roads running in the direction of the ranges, namely, north and south, skirting the swamps and above the high water level would be of inestimable value and facilitate the means of getting at the frontier posts; at present provisions of every kind, together with the post, and every thing else is sent by boat. Even in the driest weather when marching is possible, you have not the least track to guide you, a plantain-tree or a bamboo at every quarter of a mile are luxurious landmarks adopted by the Police, but bridges and roads are unknown.

A most absurd incident occurred to us on one occasion which will illustrate the difficulties to be encountered in Sylhet. We came suddenly on a deep rapid river without, apparently, a suspicion of a boat or means of crossing. There seemed nothing for it but a swim; clothes floated accordingly we made arrangements; our watches in our mouths, and over in water-proofs. We were sitting stripped on the river's bank when a little urchin arrived on the scene with the information that he had found a canoe sunk in the river. I think we were rather disappointed at the solution of the difficulty.

Leaving the Langai stockade, our course lay over the Pateria range making for Gownnuggur where we were to spend the night under the hospitable roof of Mr. Smith, a tea-planter. This was, I really think, a more detestable march than our walk to the top of the Chata-Choor. For miles we trudged ankle-deep in the filthiest

mud in the bed of a stream arched in close to our heads with dense jungle, and the sides of the mountains almost perpendicular and very rocky. But the view from the top of Adam Teela repaid us and gave us a good idea of the impracticable nature of the forests extending as far south as the eye could reach. We had hoped to get Kookie guides to take us the direct route from Langai to Alleenugger, but the track was hardly known and very seldom traversed, and short cuts in such a country would probably involve sleeping in the forest and jungle-fever. The want of such a road took us considerably further north than we intended to go, but there was no help for it.

From Gownrigger to the Hingagea Police Station, the country was open and easily ridden over, being an enormous plain with scarce a land-mark. But Messrs. Daley and Patch, the Cachar and Sylhet Superintendents of Police, who kindly accompanied me, seemed to run their districts by scent, at any rate, without any appreciable landmarks, they seldom failed to hit their point. We slept at a little bungalow used as the Police cutcherry, and next morning rode about six miles to the Alleenugger stockade passing through zemindar Allee Ahmed's estates about half way. He has a fine large brick-built house with extensive buildings around it, and an enormous tank in front within sight of the Kookie villages on the Hurrargunge range, the last attacked. His houses would form an attractive bait for a heavy raid, but with a company of Infantry to his south he has nothing to fear. The stockade was built by Captains Butter and Robertson with Companies of the 43rd and 44th, and is certainly the best-built of all; and being on a level space is of a more regular rectangular figure than the others, and is composed of half bastions connected by long faces. The selection of a position for the work was a matter of some difficulty, and regarding it Captain Butter thus writes:—

“We examined the country to Khumber Ghat and thence eastwards three miles to Cherra Gowree, where there was a guard of thirty men of the Tipperah Raja's; thence northward past Alleenugger including the Kookee villages in the Harrargunj hills lately attacked by the Looshais. The Kookies appeared to be confident that the raiders coming by the Jampoi range and striking westward from Bongsool peak and then northward along the Harrargunj range would only descend by two paths. One of these in debouching from the hills, faces the Cherra Gowree guard near Kumber Ghat. The other enters the plain about two miles to the north-east of Alleenugger, and was in fact that by which the raiders had come on the 27th February when they were driven off by a patrolling party of the 44th. Facing the latter path at a Munipooree village near Waldooree, Captain Robertson had posted a guard. The position at Alleenugger seemed to be sufficiently near both of these threatened spots, and the proximity of the Munnoo River and a large tank made it particularly suitable.”

From a personal inspection of the site and its neighbourhood, I

quite agree with the above remarks, and that it is the best position which could have been chosen. The stockade is, roughly speaking, about 250 feet square. The tracing commenced on the 23rd March and by the 23rd April, the whole of the wood-work and a greater part of the earth-work, with field magazine and gates, had been completed. The work was done really excellently by the officers and men of both corps.

The rains set in with unusual violence and storms, and by the end of April all the essential portions of the stockades and barracks having been completed, all troops, excepting those which were to form the garrisons of these posts during the rains, were withdrawn to their regimental head-quarters. Each stockade was to hold a company; the three in Cachar by the 4th; the two in Sylhet by the 44th, with a third company at Sylhet itself.

I had some fears as to the result of keeping troops out during the rains in such dense forests newly cleared, but the result has been far more satisfactory than could have been anticipated.

Thus ended the field operations in Sylhet and Cachar in 1871. The planters feel confident, that the Frontier defence, inaugurated by Lord Napier of Magdala, is a strongly protective measure, and whatever may be the steps taken hereafter to teach these savage tribes our power, the season was so far advanced last year, that nothing more than *was* done, could have been undertaken; as it was, the rains had well set in before the troops all reached their quarters.

GEO. BOURCHIER, BRIGADIER GENL.,

SHILLONG :

*Comdg. Eastern Frontier District.*

22nd Augt., 1871. }



## II.

### Record of the 21st Regiment Bombay Native Infantry or Marine Battalion.

1777.—THE Battalion was raised by orders of Government under date the 3rd January 1777, as follows, *viz* :—

“The Honorable the President and Council have been pleased to order that five hundred sepoys shall be raised as a corps for the service of the Marine, and the same encouragement given to them as to the other sepoys in the establishment.

“This corps to consist of five companies and each company to consist of one Subadar, two Jemadars, one European Serjeant, six Havildars, six Naiques, one Fifer, two Drummers, and eighty-five Privates.”

“They have also been pleased to appoint Captain James Jameson to the command of this corps, and Lieutenant William Hudson, Adjutant; also to add

A Black Commandant.

An European Serjeant.

A Black Adjutant, to be one of the Jemadars.

A Black Doctor.

A Fife Major, one of the Fifers.

A Drum Major, one of the Drummers.

A Head Sub-Assistant Apothecary and two other Sub-Assistants.”

The Battalion was not deemed effective until late in the year 1777, when it was reviewed and directed to assume the peculiar duties for which it was formed. The following order was published :—

“17th November 1777.

“GENERAL ORDERS.—The Commanding Officer, being entirely satisfied with the appearance and behaviour of the Marine Battalion at the Review this morning, thinks proper to signify the same in public orders, and desires the Commandant to thank the inferior officers in his name for their diligence and attention.

“As that Battalion is intended to perform all Marine duties, one Havildar, one Naique, and eight sepoys of that corps are immediately to relieve the like number, now on board the *Betsy* schooner; they are also, on Thursday morning next, to relieve all the detachments from on board the other gallivats and vessels in the service of the Hon<sup>ble</sup> Company now lying in the harbour of Bombay with the like number.”

By the foregoing order, the Battalion was now in the performance of marine duties, but its strength not being found adequate, it was augmented to an establishment of eight companies by an order of Government under date the 9th January 1778, as follows:—

1778. “The Hon’ble the President and Council, finding the Marine Battalion of sepoy insufficient in number to the duties required from it, have been pleased to order that it be augmented as soon as possible to eight companies which are to consist of one hundred private men each, with the same number of black officers as are at present allowed to each company and no increase of European officers.”

During the service in the year 1779 against Surdar Khan, an officer in the service of Hyder Ally, the Detachments of the Battalion from on board the several vessels *Durruck*, *Eagle*, *Manchester*, *Bombay Grab*, and the *Pattamar* boats then on the coast, were landed at Tellicherry, and directed to join the British Detachment commanded by Captain Jameson. In the actions that ensued on this service, many officers and men were killed and wounded; among others Jemadar Sheik Nathoo, was shot by a musket ball in the thigh.

These detachments were afterwards employed on board their respective vessels in preventing the retreat of merchants, with goods down the creek of Calicut during the time the British Troops were besieging that fort.

In consequence of the great demand for men for the Marine duties in 1785, Government was pleased to order drafts from the 1st, 3rd, 4th, and 5th Battalions to complete the corps.

1785. The year following a standard was laid down for recruits for the Company’s native corps, when the Battalion was allowed to entertain Battalion men an inch less in height (5 feet 2 inches) than the other corps in the army.

1786. 1788.—The Marine Battalion consisted of eight companies, each company of

One Subadar,  
Two Jemadars,  
Five Havildars,  
Five Naiques,  
Two Drummers and Fifers,  
One Waterman,  
One-hundred Sepoys.

When the distinctions for the native corps were selected by the Commander-in-Chief in November 1788, the Battalion feather was ordered to be black, with blue ‘angricks;’\* and another badge was added.

1791. In 1791 the Companies of the Battalion were ordered to be augmented by an addition of one Havildar, one Naique, and seventeen Sepoys.

\* Sic in original.

Subadar Shaik Dawd and Jemadar Shaik Balloh were the officers of the Battalion selected by Government for the recruiting service, the former for Surat, the latter for Bancoote.

At this period Government allowed a bounty of three Rupees to each recruit on being approved of by the Deputy Adjutant General.

In October following, the Lines of the Battalion were ordered to be removed to Colabah.

The Battalion furnished this year a portion of non-commissioned officers and men for the newly-raised Local Battalion at Surat.

In December Lieutenant Cape was appointed Adjutant, and the following removals took place:—

Lieutenant Kemp, transferred from the 2nd Battalion.

When the Regulations, for modelling the army, transmitted to India by the Court of Directors, were published under date the 24th May 1796, by orders of the Governor in Council, the corps was directed to be commanded by a Major, and to have a similar number of inferior officers as the other Battalions of Native Infantry.

The Battalion was formed into ten Companies, and the under-mentioned officers posted to it, viz:—

|                             |                             |
|-----------------------------|-----------------------------|
| Major Thomas Marshall,      | Lieutenant George Pibbons,  |
| Captain William Williamson, | „ Samuel Aloodie,           |
| „ John Brown,               | „ E. E. S. Waddington,      |
| „ Charles Patrick,          | „ E. S. Kemp,               |
| „ William Lambert,          | „ Michl. Kennedy,           |
| Lieutenant David Price,     | Three Lieutenants } vacant. |
| „ John Mynne,               | Five Ensigns }              |
| „ Thomas Cape,              | Adjutant Thomas Cape.       |

Early in 1797, the Detachment of the Battalion serving on board the armed boat *Vigilant* was distinguished by the approbation of Government, as published to the army under date the 31st July 1797, viz:—

“The Board fully concurring with the Commander-in-Chief in the justice and expediency of noticing the gallant conduct of the ‘Matrisses,’ and the Detachment from the Marine Battalion, in the late action on board the *Vigilant*.

“With regard to the native officers and sepoy of the Marine Battalion, the Commander-in-Chief is requested to cause the Havildar to be promoted to Jemadar, the two Naiques to be Havildars, and two of the sepoy to be selected for Naiques with the gratuity to the party of one month’s pay, and if the sepoy, who is since dead of his wounds, has left any family in distressed circumstances, they may apply for relief under the Regulation for the Pension Establishment.”

In conformity with the above, Havildar Mandnack Esnack was promoted to Jemadar, to rank from the 13th January 1797, and the following promotions were made in the Battalion by Major Marshall, viz., Naique Ruttonmettee Sonmettee and Nimnac Sownac, to be

Havildars, and Privates Cosnack Subannac and Mandnac Caunnac, to be Naiques.

The Commander-in-Chief was pleased to notice in General Order under date the 21st January 1798, the conduct of a Detachment of the Battalion that served on board the *Viper* in the following flattering language, viz. :—

1798. “ The firmness and bravery evinced by the detachment of the Marine Battalion, on duty in the *Viper* during the last trip up the Gulph of Persia, in defending the vessel when attacked under circumstances of peculiar difficulty, are considered by Government as highly meritorious, and the Commander-in-Chief has particular pleasure in conveying these sentiments to the detachment. The Board ever happy to have it in their power to encourage fidelity and bravery by a due notice thereof, have been pleased to direct that the notification of the high-sense that they entertain of such meritorious conduct be accompanied by a gratuity of one month’s full pay to the aforesaid Marine department, and by a present of a silver chain and badge of the value of one hundred Rupees to Shaik Gunny, Havildar, who commanded the party. The badge to be engraved with the figure of a ship with a viper head and inscribed with the words ‘ The Reward of fidelity and valour.’ ”

1799. In January 1799, the following order, affecting Jemadar Shaik Gunny, was issued :—

“ The Hon’ble the Governor in Council, having directed a silver badge and chain to be presented to Shaik Gunny, Jemadar in the Marine Battalion, as a reward, in addition to his late promotion, for his brave and gallant conduct during the defence of the *Viper* Cruizer, when attacked up the Gulph of Persia, Major Williamson will be pleased to receive the same from the Adjutant General’s office, and on delivering it to Shaik Gunny, will direct this order to be fully explained to the Battalion.”

The orders respecting dress, were in this year renewed, and published to the army in that relative to the Battalion as follows, viz. :—

1800. “ The officers of the Marine Battalion to wear jackets with  
1800. “ green facing cuffs and collar and silver embroidery. The strap of the epulette to be of  
“ a green ground with an anchor engraved on the button and breast-plate. In every other respect the dress and appointments of the officers of this corps to be the same as the officers of Native Infantry.”

In February 1802, the following extract from the Hon’ble Company’s Commands in the Military Department affecting the Battalion, was published in General Orders :—

1802. PARA. 2.—“ Considering the Marine Battalion at your Presidency to be of material importance, as well from its services on board the Cruizers, as from the probability of its furnishing recruits for the



“ Regular Battalions, we have resolved that it shall be placed on  
 “ a footing with the Battalions of the Native Regiments in point of  
 “ officers, and shall be commanded by a Lieutenant-Colonel.

PARA. 3.—“ And in consideration of the active and zealous ser-  
 “ vices and sufferings of Lieutenant-Colonel Williamson, who formerly  
 “ commanded that Battalion, and the recommendation of your late  
 “ Commander-in-Chief, we direct that he be appointed to the com-  
 “ mand of the Marine Battalion.”

Pursuant to the Court's command, an augmentation of a Lieute-  
 nant-Colonel took place in the army, and Lieutenant-Colonel Wil-  
 liamson was nominated to the command of the Battalion.

In March 1803, the promotion of Shaik Abdool Rymon was  
 announced in the following order by Govern-  
 ment :—

“ There being a vacancy in the Marine Battalion, resolved that  
 “ Havildar Shaik Abdul Raymon be promoted to the rank of Jemadar,  
 “ *vice* Soolamaun Israil, removed to the 6th Regiment. Government  
 “ being happy at the opportunity of distinguishing such meritorious  
 “ military conduct as evinced by Shaik Abdool Raymon in the action  
 “ with the piratical Pallivats on the 27th January last, when, under  
 “ the command of Serjeant Evans; date of promotion 26th February,  
 “ 1803.”

BY THE OFFICER COMMANDER-IN-CHIEF.—“ Government in acknow-  
 “ ledging the gallantry and good conduct of the detachment of the  
 “ Marine Battalion, that served under Serjeant Evans, has in their  
 “ liberality been pleased to order, that each of the non-commis-  
 “ sioned Officers and Privates shall receive two months' pay as a  
 “ gratuity. Lieut-Colonel Williamson will be pleased to indent for  
 “ the amount, and to present the reward to the detachment in such  
 “ public manner as he may judge proper to promote zeal and emula-  
 “ tion in the corps.”

On the augmentation of a Lieutenant-Colonel to the Battalion,  
 the officers presented a Memorial to Government, representing the  
 injury they sustained by the command of the Battalion being taken  
 from Major Buchanan, which was forwarded to England.

In March 1804, the reply of the Court of Directors was published  
 in General Orders, in which they direct that the  
 Battalion shall revert to the system prescribed  
 by their orders of January 1796, and be commanded by a Major; ac-  
 cordingly Major Hunt was appointed by Govern-  
 ment to the command of the corps and directed  
 to receive charge from Lieutenant-Colonel Williamson.

By General Order of this date, the Marine Battalion was per-  
 mitted to entertain recruits of as low a stature  
 as 5 feet 2 inches, but to be young, men,  
 or growing lads.

1806, October 27th.

The following Order affecting Havildar Shaik  
 Ebram, was published by Government :—

1808, September 7th.

"The Hon'ble the Governor-in-Council is pleased to direct the following promotion to take place in the Marine Battalion. "Jemadar Goolamy Khawn, to be Subadar, *vice* Shaik Gunny deceased, date of rank 10th August 1808."

"Havildar Shaik Ebram to be Jemadar, *vice* Goolamy Khawn promoted, date of rank 10th August 1808."  
1808, September 7th.

The Hon'ble the Governor-in-Council derives satisfaction from conferring the present promotion on Havildar Shaik Ebram as a reward for his gallant conduct whilst in command of a detachment on board the *Fury* when attacked by pirates in the Gulf of Persia.

The Government, by orders by this date, directed the following widows of men of the Marine Battalion, who were killed on board the *Sylph*, to be pensioned from the date of their husbands' decease:—

Ansý, widow of Lucknac Esnac, Havildar.  
Gosey, ditto of Calnac Downac, Naique.  
Ramy, ditto of Roopnac Sonnac, Sepoy.  
Gowrey, ditto of Gunnak Gondnac, "  
Anundy, ditto of Balnac Jannac "  
Dewkey, ditto of Dewnac Bamnac "  
Dewh, ditto of Bamnac Sonnac "

In 1810 a naval force commanded by Captain Wainwright of the Royal Navy, and a detachment of Europeans and Natives under the orders of Lieutenant-Colonel Smith of the 65th Regiment, were sent against the parties in the Gulf of Persia. A detail from this corps, under Captain Egan, formed a part of the force employed upon this occasion and shared with the others in the different engagements which took place. Colonel Smith bestowed all due praise upon the manner in which his orders were carried into effect by the corps employed. Government were also pleased to express their approbation of the services of the force in every handsome terms.

The same year, the following order, prescribing the duties of the sepoys on ship board, was promulgated by Government:—

"*Bombay Castle, 28th April, 1810.*

"The Honourable the Governor in Council has been pleased to order the following regulation to be framed for the government and conduct of the marine sepoys, serving on board the Hon'ble Company's Cruizers, with the view of defining their duties so as to prevent the recurrence of complaints between the two branches of the marine service.

"The sepoys are to assist in rooking the ship below, in hauling up and paying down cables, in hoisting in and out boats, water and provisions, in short, in manning the tackle-falls on all occasions.

"2nd. They are to draw and hand along water for the purpose of washing the ship, and are personally to clean out their own berths.

"3rd. They are not to wash their clothes but upon days specifically appointed by the regulation of the ships.

"4th. They are not to be compelled to go aloft, to scrub the decks, or perform any menial office.

"5th. In case of misconduct, a non-commissioned officer to be confined, and (if the Havildar) a Naique, or (if the Naique) a Private is to be selected to perform his duty till he can be tried or upon due sense of his misconduct, it shall be deemed proper to release him.

"6th. In no case is a non-commissioned officer to be struck, or to have corporal punishment.

"7th. Privates are, for crimes of a serious nature, to be confined till they can be brought to trial, but for offences of less importance, when absent from the Presidency, and the support of discipline requires immediate punishment they are to be punished with a 'rattan' according to the degree of the offence, by the Drummer or Fifer, in presence of the detachments to whom the cause of the punishment is to be clearly explained, or for misconduct not demanding corporal punishment, they may have allotted to them the task of picking oakum or knotting yarns while their comrades are relieved from duty.

Upon the promotion of Havildar Hurry Kerrykur to Jemadar, the Hon'ble the Governor-in-Council was pleased

August 4th.

to pass the following order:—

"The Governor-in-Council, in conferring the above promotion on Havildar Hurry Kerrykur, is pleased to announce that it arises out of his general good behaviour and particularly in consideration of his gallant conduct in an attack made on the piratical station of Bali under the command of Captain Vashin of His Majesty's Navy which the Governor-in-Council would have earlier noticed had the circumstances been duly brought to his knowledge."

After the reduction of the French Islands in India by the British

1811, April 3rd.

Arms, the following honorable testimony of the fidelity and attachment of a detachment of the corps was published by Government:—

"The Hon'ble the Governor-in-Council having received official

1811, April 3rd,

"information from the Commander of the *Aurora* cruiser, that the late Government of the Isle of France and its officers had endeavoured to prevail upon a detachment of the Marine Battalion embarked on board that vessel, to enter the French service, after her capture by the French frigates *Astrea* and *Iphigenia* on the 21st September last, and that various ineffectual means, as well of persuasion as of a coercive nature had been resorted to to induce the sepoys to swerve from their allegiance to the Honorable Company, deemed it proper to cause the circumstances of these transactions to be thoroughly investigated.

"The Board of officers appointed for this purpose, having closed their Proceedings, the Governor-in-Council has sincere satisfaction in announcing that the result of the enquiry has afforded another

“distinguished proof of the fidelity and attachment of the native  
“army of this establishment, under circumstances of a very trying  
“nature.

“It appears that in addition to repeated offers of encouragement,  
“and failing in that, to the infliction of severe and even cruel treat-  
“ment, to induce and compel the Detachment generally to betray  
“their duty to the Hon’ble Company, Shekh Boodle in particular upon  
“refusing to enter the French service, was thrice severely wounded  
“in the arm and once on the head, the effects of which (it is apprehend-  
“ed) have incapacitated this faithful soldier from the performance of  
“further duty.

“The conduct of the Detachment, though not unprecedented  
“by various examples of similar attachment in the native troops  
“of this establishment, being accordingly considered as highly worthy  
“of a marked testimony of public approbation, the Governor-in-  
“Council is, for this purpose, pleased to direct that a silver badge  
“with a suitable inscription be presented to each man of the party as  
“enumerated in the following list: that Lance Havildar Dhondnac  
“Pudnac, be promoted to the rank of Havildar; Morsahib Khan,  
“Lance Naique, to that of Naique; and that each of the Privates  
“receive the pay of Naique until respectively promoted to that rank  
“by vacancies in the corps to which they belong.”

List of Detachment embarked on board the Hon’ble Company’s  
Cruizer *Aurora* :—

|                                     |
|-------------------------------------|
| Naique Dhondnac, Lance Havildar,    |
| Sepoy Koorsahib Khan, Lance Naique, |
| „ Ramnac Malnae,                    |
| „ Sheik Bahadoor,                   |
| „ Dhunnac Dadnac,                   |
| „ Sheik Boodle,                     |
| „ Seady Abraham,                    |
| „ Rugona Khan,                      |
| „ Sheik Ishmail,                    |
| „ Dhondnac Bagnac,                  |
| „ Sutnac Lingnac,                   |
| „ Sunkernac Sumnac,                 |
| „ Lucknac Damnac,                   |
| „ Ambunac Dhrumnac,                 |
| „ Goonnac Dhonnac,                  |
| „ Sheik Moideen,                    |
| „ Downac Maikindnac,                |

and the badges were accordingly presented to the men on General Parade by the Adjutant General of the army on the 3rd September 1811, the Commander-in-Chief complimenting the Detachment in handsome terms in the orders of the day.

Havildar Ragoojee Bhoonsla, having distinguished himself on service, the Hon’ble the Governor-in-Council was pleased to publish the following order respecting him :—

1812, March 25th.

"In consideration of the gallant conduct of Ragoojee Bhonsla, April 1st. "Havildar, in the Marine Battation, while employed with the *Dart*, Pattamar against the "piratical vessels in the gulf of Cutch, the Hon'ble the Governor-in-Council directs that he be promoted to Jemadar in a corps of Native Infantry of the line, as there are objections to Hindoos embarking on boardship on Marine duty, and accordingly Ragoojee Bhonsla "was promoted and removed to the 2nd Battalion 7th Regiment."

The conduct of the Detachment which served on board the 1814. *Aurora*, in refusing to enter the French service, as before specified in the General Orders of Government, is thus noticed in the Hon'ble Court's letter of 6th June 1814, published to the army 15th December, 1814.

PARA. 151.—"The conduct of the Native Marines, in refusing to 1815. "enter the French service under the circumstances described, is highly creditable to their fidelity and well-deserving the rewards which you have bestowed upon them."

PARA. 152.—"We desire that you will cause these sentiments of approbation to be officially communicated to them as well as our sanction of the rewards being conferred upon them."

Intelligence was received of the loss of a Havildar and seventeen 7th November. sepoy who were serving on board the "*Fagnmouth*" cruiser and had been put in charge of two prows which were detained by Lieutenant Walker of Beelcomba in the eastern seas, and which, it is supposed, foundered at their anchors in a storm during the night of the 8th June 1816.

The widows and children of the deceased were pensioned agreeably to the Regulation.

A detachment of the corps, serving on board the *Benares* 1816, August 28th. cruiser, was employed with other troops in the reduction of the fortress of Moros, in the Straits of Macassar which was successfully stormed on the 8th June 1816.

The orders published on the occasion speak handsomely of the conduct of the Marines. A Havildar and two Privates were killed, and a Naique and three Privates wounded.

The same detachment having, for a time, been transferred to the *Nautilus* cruiser whilst to the eastward, distinguished themselves highly upon the occasion of that vessel being attacked by the American National ship *Peacock* when her Commander, Lieutenant Boyce, lost a leg, and Subadar Essnac Lonnac of the Marine Battalion, was killed, both his legs having been carried away by a cannon shot. Lieutenant Boyce speaks of the Detachment of Marines in the highest terms.

In the end of this month, a Detachment from the Battalion of 1817. Artillery and Marine Battalion, under the orders of Captain William Morrison, of the 9th Regiment, was employed in the reduction of the Forts of Severndroog which surrendered on the 4th of December. The Governor-in-Coun-

cil, in General Orders of 20th December, was pleased to express his high sense of the conduct of the Detachment upon the occasion.

The General Order states, that though opposed by very superior numbers, the energy of this small force succeeded in surmounting every obstacle, escalading and taking in open day, with a party consisting of only fifty sepoy and thirty seamen led by Captain Campbell of the 9th Regiment and Lieutenant Dominicetti of the Marines, the Fort of Kundah. Notwithstanding the heavy fire of the enemy, this gallant and successful enterprize having completely intimidated the enemy, the two other forts of Goa and Gunjeera were abandoned during the night. The native commissioned officer employed under Captain Campbell on that duty was Subadar Hurry Kerikur of the Marine Battalion.

On the 23rd January, the following order directing the Marine Battalion to be formed into a Regular Regiment of the line, was issued to the army :—

*"Bombay Castle, 21st January, 1818.*

"His Excellency the Most Noble the Governor General-in-Council having been pleased to direct the formation of the Marine Battalion into a Regular Regiment of the line, the Right Hon'ble the Governor-in-Council, in giving effect to his Lordship's orders, is pleased to direct that the augmentation shall bear date the 1st January 1818, that day having been fixed upon in commemoration of the heroine conduct of the 1st Battalion, 1st Regiment of Native Infantry, of this establishment in the memorable action of Corrygaum, when it so bravely and successfully defended itself against an attack of the Peishwa's Army. The Marine Battalion is accordingly formed into a Regiment and denominated the 11th Regiment Native Infantry."

The following General Order was published by the Commander-in-Chief :—

"The 11th Regiment Native Infantry is to wear dark green facings, gold epaulettes and yellow buttons. The first Battalion will continue the anchor as a device placed under the number of the Regiment, and the 2nd Battalion will be distinguished only by the numerical number XI."

In order to re-inforce the small detachment employed against Severndroog, an additional detail under Captain Francis Farquharson had been sent off with artillery &c., but this detail arrived too late to be employed on that service, the place having surrendered the day before they reached the harbour of Severndroog. Shortly afterwards, the Force at that station was increased by the newly raised 1st Battalion, 10th Regiment, commanded by Lieutenant-Colonel Michael Kennedy, who, with a very small force, consisting of a few disciplined men of his own corps, 50 men under Lieutenant Capon, of the 1st (or Marine Battalion, 11th Regiment) with the details from the corps serving as Marines on the cruisers and pattamars, employed in that quarter under Captain Farquharson, reduced the strong forts of Muddunghur, Ramghur, Paulghur, Russalghur, Anjunwell, and other

strongholds with the territories dependent thereon in a manner redounding highly to the zeal and gallantry of himself and his little band.

The following are the General Orders which were published upon the different occasions :—

*“ Bombay, Friday, 13th March, 1818.*

---

GENERAL ORDERS BY THE RIGHT HON'BLE THE GOVERNOR-IN-COUNCIL.

*“ Bombay Castle, 9th March, 1818.*

“The Reduction of the Fort of Madunghur was announced in  
 1818. “General Orders of the 20th ultimo, but having  
 “since received a detailed Report from Lieuten-  
 “tenant-Colonel Kennedy, of his operation against that Fort and  
 “Jamba, the Right Hon'ble the Governor in Council takes occasion in  
 “publishing to the army, the Detachment Orders, issued by Lieutenant-  
 “Colonel Kennedy again to express his cordial approbation of that  
 “conduct of those engaged.”

---

DETACHMENT ORDERS BY LIEUTENANT-COLONEL KENNEDY.

*Fort, 15th February, 1818.*

“Lieutenant-Colonel Kennedy has the highest satisfaction in  
 “congratulating the troops under his command on the brilliant success  
 “of this morning.

“To Captain Farquharson, Lieutenants Dominicetti and Capon, to  
 “the Seamen, Native Officers, and Soldiers, Volunteers for the Storming  
 “Party, Lieutenant-Colonel Kennedy offers his most sincere acknow-  
 “ledgments for the intrepid and gallant manner in which they assaulted  
 “the triple stockades in front of the Communication Gateway, and  
 “carried by escalade the two Forts of Madunghur and Jambah.

“For the excellent plan of attack, laid down in yesterday's Orders,  
 “and so gallantly carried into execution this morning, Lieutenant-  
 “Colonel Kennedy is indebted to Captain Farquharson, who proposed  
 “and principally arranged it; neither can the Lieutenant-Colonel  
 “pass over unnoticed the excellent conduct of Lieutenant Waddington,  
 “who converted successfully into real attack what at first was intended  
 “only to be feint.

“To Lieutenant Dominicetti and Ensign Dashwood for their highly  
 “zealous exertions in erecting the Battery, Lieutenant-Colonel  
 “Kennedy's best thanks are due.”

The precision of the fire from the Battery, where Ensign Dashwood  
 and Captain Robson served, and of the gun placed under charge of  
 Captain Taylor and Lieutenant Cogan, greatly contributed to the  
 success of the enterprize whilst the manner in which the feint, under

Captain Taylor's directions, was conducted, does every credit to Jemadar Janmeter Sonmeter, 1st Battalion 11th Regiment, the Native officer leading it on.

"Lieutenant-Colonel Kennedy assures the whole of the officers, Military and Marine, that no part of each individual's merit shall pass unnoticed in his report to the Commander-in-Chief.

(Sd.) D. CAPON, *Lieut., 1st Regt.,*

*Acting Line Adjutant."*

"The great exertions of the troops, in constructing a Battery on the summit of the hill, and giving up their tents, carpets, and cumlees for making sand-bags, evince in a particular manner the zeal of all and merit the highest commendation.

"The manner in which the enterprize was planned and so ably and spiritedly conducted by a Detachment not exceeding half the number of the garrison is highly creditable to Lieutenant-Colonel Kennedy and all the officers and men of the Hon'ble the Company's Military and Marine services employed, and it is gratifying to observe that during these operations the success of which so much depended on the united exertions of the two branches of the service, the most perfect cordiality has existed.

"By order of the Right Hon'ble the Governor-in-Council.

(Sd.) J. FARISH,

*Secretary to Government."*

*Bombay, Tuesday, 17th March, 1818.*

---

GENERAL ORDERS BY THE RIGHT HON'BLE THE GOVERNOR-IN-COUNCIL.

*Bombay Castle, 10th March, 1818.*

"The Right Hon'ble the Governor-in-Council has great satisfaction in publishing the following Detachment Orders issued by Lieutenant-Colonel Kennedy, on taking the forts of Ramghur and Palghur, and to express his approbation of the conduct of the Lieutenant-Colonel and of the officers and men engaged on the occasion."

---

*Paulghur, 4th March, 1818.*

DETACHMENT ORDERS BY LIEUTENANT-COLONEL KENNEDY.

"The Commanding Officer begs to return his best thanks to the officers and men of the Detachment he has the honor to command for their cool, steady and gallant conduct in the attack and escalade of the forts of Ramghur and Paulghur this morning. The difficulties the Detachment had to encounter in climbing a hill of such an abrupt ascent under a heavy fire from two forts, where they



“ were necessitated to assist themselves up by the bushes and rocks  
 “ that lay in their way, reflects the highest credit on every individual  
 “ engaged in this hazardous enterprize. The Commanding Officer  
 “ cannot refrain from particularizing the names of Captain Farquhar-  
 “ son, (who was the first man who mounted the walls) Lieutenant  
 “ Capon and Scymour, than whom none could have behaved with  
 “ greater zeal and gallantry during the arduous service they were en-  
 “ gaged in this morning.

(Sd.) M. KENNEDY, LIEUT.-COL.,”

By order of the Right Hon’ble the Governor-in-Council.

(Sd.) J. FARISH,

*Secretary to Government.*

“ *Bombay, Friday, 27th March, 1818.*

GENERAL ORDERS BY THE RIGHT HON’BLE THE GOVERNOR-IN COUNCIL,

“ *Bombay Castle, 25th March, 1818.*

“ The Right Hon’ble the Governor in Council has the pleasure to  
 “ announce that the Fort of Russalghur has been surrendered to Lieut-  
 “ nant Colonel Kennedy by capitulation and the Fort of Gunga taken  
 “ possession of by the force in the Concan, while under the command  
 “ of Major Hall, of H. M.’s 89th Regiment.

“ By order of the Right Hon’ble the Governor-in-Council.

(Sd.) J. FARISH,

*Secretary to Government.”*

*Bombay, Wednesday, 10th June, 1818*

GENERAL ORDERS BY THE RIGHT HON’BLE THE GOVERNOR-IN-COUNCIL.

*Bombay Castle, 8th June, 1818.*

“ The Right Hon’ble the Governor in Council is pleased to an-  
 “ nounce that the Forts of Byramghur and Bowunghur have been taken  
 “ possession of by the troops under the command of Lieutenant-Colo-  
 “ nel Kennedy.

“ By order of the Right Hon’ble the Governor-in-Council.

(Sd.) J. FARISH,

*Secy. to Govt.”*

*Bombay, Monday, 22nd June, 1818.*

GENERAL ORDERS BY THE RIGHT HON'BLE THE GOVERNOR-IN-COUNCIL.

*Bombay Castle, 19th June, 1818.*

"The Right Hon'ble the Governor in Council is pleased to announce the surrender of the Forts Jeyghur and Wijeyghur to the troops under the command of Lieutenant-Colonel Kennedy.

"The Right Hon'ble the Governor-in-Council is pleased to announce the surrender of the Town of Sunghumseen and the Fort of Rutnaghurry to the troops under the command of Lieutenant-Colonel Kennedy.

"By order of the Right Hon'ble the Governor-in-Council.

(Sd.) F. WARDEN,  
*Chief Secy. to Govt."*

About the same time a detail of the corps, serving as Marines on board the *Sylph* cruiser, were landed at Malwan and employed for some time under Lieutenant-Colonel Imlach, C. B., and received the thanks of the Governor-in-Council for their gallant and successful exertions in that service. The following order was published on the occasion :—

*Bombay, Monday, 18th May, 1818.*

---

GENERALS ORDERS BY THE RIGHT HON'BLE THE GOVERNOR-IN-COUNCIL.

*Bombay Castle, 14th May, 1818.*

"The Right Hon'ble the Governor-in-Council has much satisfaction in announcing his approbation of the gallant conduct of the Detachment under Brevet Captain Hughes, assisted by Captain Robson and Dominicetti, and a party of the Seamen and Marines belonging to the Hon'ble Company's cruisers *Prince of Wales* and *Sylph* on the occasion of an attack made on the advanced posts of the enemy on the banks of the Dewghur river, when the enemy was surprized, with the loss of above twenty-five killed and wounded and nine prisoners.

"By order of the Right Hon'ble the Governor-in-Council.

(Sd.) J. FARISH.  
*Secty. to Government."*

The Governor-General was pleased to order three months' full batta as gratuity to be issued to the troops employed on service in the Concan.

On the 14th May 1818, the Commanding Officer of the corps received a letter from the Major of Brigade at Sydney, New South Wales, dated 18th July 1817, stating that Subadar Balnak Tannak of the Marine Battalion, who

14th May.

had gone to that Colony in command of a guard over convicts had, during his stay there, conducted himself entirely to the satisfaction of his Excellency Governor Macquarrie and recommending the Subadar to the notice and protection of his Commanding Officer.

The Hon'ble the Court of Directors having been pleased to direct that Interpreters and Quarter Masters should be appointed to each Regiment of Light Cavalry and Battalion of Native Infantry, the term Linguist was discontinued, and that of Interpreter and Quarter Master substituted in lieu of it, and Lieutenant W. Black was permitted by Government to hold the situation united with that of Adjutant.

By General Orders of Government, dated 25th November 1818, and issued to the army on the 27th of that month, the Rank of Subadar Major, with the Brevet Pay of 25 Rupees per month, was introduced on this establishment, and upon this occasion Subadar Sheik Nathoo, the senior native officer with the corps, on account of his long and faithful services, was promoted to that rank on the recommendation of Major Egan, the Commanding Officer.

By the same order the rank of Colour Havildar, with additional pay per month, was also directed to be introduced.

Towards the close of September 1819, a force being directed to proceed to the Persian Gulf, under the orders of Major General Sir William Grant Kier, K. M. F., for the purpose of reducing the Piratical States in that quarter, the following Detachment from the Marine Battalion, consisting of

2 Captains,  
4 Lieutenants,  
4 Native Officers,  
10 Havildars, and  
180 Rank and Files,

was ordered to form part of the expedition, which sailed from Bombay in the beginning of November.

Whilst the force occupied in the reduction of Rasool Khyma, the men of the Battalion serving on board the cruizers were landed and with the others on shore formed into a Provisional Battalion under the command of Captain Deschamps.

The fort of Rasool Khyma and other places being reduced, the thanks of Government were published to the whole force employed, the greater part of which returned to the Presidency in the month of March, behaving the Detachment of the Marine Battalion, 1st Battalion, 2nd Regiment, and Flank Companies 1st Battalion 3rd Regiment, to Garrison Rasool Khyma.

Upon this service, Subadar Sheik Nathoo was appointed Aid-de-Camp to Major General S. W. G. Keir, Commander of the force, and received Rupees 2 per day of staff pay, besides an allowance of Rupees 30 per month for a horse during the period he held the appointment.

1820.

On the recommendation of the Military Board and in consideration of the fidelity and attachment to the Hon'ble Company's service displayed by the late Dhoneadnac Dadnac Havildar of the 1st Battalion 11th Regiment, when taken prisoner by the French on board the Hon'ble Company's cruiser *Aurora*, on the 21st September, 1810, in resisting all persuasive and coercive means used to induce him to enter the French service, the Hon'ble the Governor-in-Council is pleased to grant to his widow Sallee and child from the Political Department, subject to the confirmation of the Hon'ble Court, although not entitled to any pension by the Regulations, an allowance exceeding by one Rupee what would have been given in ordinary circumstances if so entitled; which order his Excellency the Commander-in-Chief was requested to publish in General Orders, to be read at the head of every native corps in the service.

The Governor in Council was pleased, on the 6th July, to put the 1st Battalion on the same footing as other Battalions of the line with regard to "Cutting Money," and in consideration of the peculiar service of the corps to permit the allowance to be drawn biennially during the period the corps may remain stationed at the Presidency.

In September 1820 the Detachment of troops left at Rasool Khyma was removed from that station to the Island of Kishm. In October following a small Detachment, (of which the two Companies of the Battalion before-mentioned formed a part) embarked for Muscat, under command of Captain Thompson, of his Majesty's 17th Dragoons, to co-operate with the Imam against the tribe of Benibooali. The Detachment landed at Soor, and marched through the territories of the Imam to the attack of that tribe in their stronghold of Benibooali, situated about 50 miles in the interior. On the 9th November, as the detachment, accompanied by the troops of the Imam, was marching in column to take up a position for the attack of the fort, it was suddenly attacked by a strong body of Arabs, who, headed by their chief, rushed sword in hand upon the British Detachment and completely defeated it. On this occasion Lieutenant Short, one Subadar, three Jemadars, one Colour Havildar, nine Havildars, three Naiques, three Drummers and sixty-eight Privates, and one Puckaly of those engaged of the Marine Battalion, were killed and only twenty Privates and one Puckaly of the Marines were saved. Captain Thompson retreated upon Muscat the next day with the remainder of his Detachment accompanied by the Imam, and shortly afterwards returned to his station on the Island of Kishme.

In consequence of the disastrous defeat of Captain Thompson, mentioned above, a large force under command of Major General Lionel Smith C. B. was sent from Bombay against the tribe of Benibooali which it effectually reduced killing a large proportion in the field, raising the Fort of Beni-

boali to the ground, and carrying a considerable number of the Arabs, with their chief, to Bombay in captivity. On this service the remainder of the two Companies were employed, and after its completion the men returned to Head Quarters.

---

EXTRACT FROM GOVERNMENT ORDERS BY THE HON'BLE THE GOVERNOR.

*Bombay Castle, 24th March, 1823.*

"The Hon'ble the Governor is pleased to augment the strength  
1823, March. "of the 1st or Marine Battalion, 11th Regiment,  
"N. I. to one thousand Privates, and to direct  
"that the 2nd Battalion, 12th Regiment, cease to be a Marine  
"Battalion.

"His Excellency the Commander-in-Chief is requested to take  
"the necessary steps for transferring two hundred sepoy of the 2nd  
"Battalion, 12th Regiment, who may be well calculated for duties on  
"board cruizers and boats to the 1st Battalion of the 11th Regiment."

---

EXTRACT FROM THE GENERAL ORDERS BY THE COMMANDER-IN-CHIEF.

*Bombay, Friday, 28th March, 1823.*

"The officer commanding in the Southern Conkan will be pleased  
March. "to cause the orders of Government of the 24th  
"instant to be explained to the 2nd Battalion  
"12th Regiment N. I., on Parade, when two hundred sepoy, Mus-  
"sulmans and Purwarees are to have leave to volunteer into the 1st  
"Battalion, 11th Regiment, N. I., on that number may be completed  
"by a draft made in such manner as will be most advantageous to  
"both Battalions.

"The men composing the Draft are to be struck off the 2nd Bat-  
1823. "talion 12th Regiment N. I. and be received  
"upon that of the 1st or Marine Battalion, 11th  
"Regiment, N. I., on the 15th proximo, and be forwarded to the Pre-  
"sidency under charge of an European officer, previous to which their  
"Pay and Clothing accounts must be settled.

"No arms or accoutrements are to be transferred with these men.

"The officer commanding the 2nd Battalion 12th Regiment, N. I.,  
"will transmit to the Officer commanding the 1st or Marine Battalion  
"11th Regiment, N. I., a Register Roll of the men transferred. He  
"will likewise transmit to the Adjutant General of the army Register  
"Rolls by Companies, of the men remaining in the Battalion, and also  
"one of such individuals as are undersigned for a Battalion of the  
"line, or otherwise not well adopted for the duties on which that  
"Battalion will hereafter be employed, which such remarks as he may  
"wish to offer on each individual.

"Senior Captain F. Farquharson to be Major, and Lieutenant L. Clarke to be Captain, in succession to Brooks, Order, 3rd June 1824. "promoted date of Rank 1st May 1824.

"Senior Lieutenant E. Mason and H. Dunbabin to be Captain "on the new establishment, date of rank 1st May. 1824."

"In conformity to the General Order by the Right Hon'ble Governor Extract from General "nor General-in-Council at Fort William, dated Order, 7th June, 1824. "the 6th May, 1824, and published to the army "of this Presidency on the 31st May, the Hon'ble the Governor in "Council is pleased to notify that the Regiments of European and "Native Infantry are, from this date, divided into two, numbered as "Regiments, and finally separated as follows:—

11th Regiment N. I. to form the { 21st or Marine Regt. N. I.  
22nd Regt. N. I.

"The Hon'ble the Governor in Council is pleased to direct that, Extract from Gov. "as a temporary arrangement until the pleasure Orders, 20th Sept. 1824. "of the Hon'ble the Court of Directors be known "the 2nd extra Battalion be transferred to the line. "Under the designation of the 21st Regiment of Native Infantry, the 1824. "entire number of European Officers of the 21st "or Marine Regiment, being removed to that "corps, the present 21st Regiment, will, until further orders, be "termed the Marine Battalion of Native Infantry and be commanded "by a Major or Captain, with an Adjutant and Interpreter, and "Quarter Master."

"The Governor in Council is further pleased to authorize the 21st "Regiment of Native Infantry being placed in regard to strength of "establishment, and in every other respect on the same footing as the "other Regiments of line."

"The Hon'ble the Governor in Council has received, with great Extract from General "satisfaction, testimonials of the highly merito- Orders, 26th Feby, 1827. "rious services of a detachment of the Marine "Battalion while employed in the late war in the "Burmese territory. The conduct of Havildar Walnac Sumnac and "Naique Gunnac Seednac has been particularly distinguished, and "it has been recommended that they be confirmed in the advanced "rank which was temporarily assigned them by the officer under "whom they were employed while in the Flotilla service, the former "as a Subadar Major and the latter as a Jemadar."

"However desirous of rewarding meritorious conduct in soldiers, 1826. "the Governor in Council is precluded in justice "with many others, who have, from time to time, "been distinguished by their gallant and faithful conduct, from sanc- "tioning the promotions recommended in favor of Walnac Sumnac "and Gunnac Seednac, particularly as there does not appear a prece- "dent of such a rise in the army at either of the other Presidencies; "as an acknowledgment therefore of their brave and exemplary "conduct, Havildar Walnac Sumnac is promoted to Jemadar from

"the 9th of May 1825, and Naique Gunnac Seednac to Havildar from  
"the 7th May 1825.

"The Detachment, so honorably noticed, served on board the Hon'ble Company's Brig of War *Vestal* and was employed during the whole of the war, in the Burman Empire, under the immediate command of Commodore Hayes. The following is a letter from that distinguished officer:—

*" Calcutta, the 2nd of October, 1826.*

SIR,

"I have the honor to annex a copy of an extract from my address

Walnac Sumnac, Subadar Majors, Gunnac Seednac  
Jemadar. Pisanac Babnac Banner, Pannack Cantaha  
Drumac Ponnac, Syed Hoossun, Buknac Pudnac, Sheik  
Sooltan, Kootnac Lucknak Mullarjee, Purwave, Imaum  
Bux, Issnac Hernac.

"dated the 1st ultimo, to  
"the Military Secretary to  
"His Excellency the Com-  
"mander-in-Chief, in favour  
"of officers and soldiers of  
"the Bombay Marine Bat-

"talion, or 11th Native Infantry alluded to in the margin, and  
"beg to submit copies of the extract received in reply, for your  
"information and satisfaction.

I have the honor to be,

Sir,

Your Obedient Servant,

(Sd.) JOHN HAYES,

*Commodore.*

*· Extract from my Address dated the 1st ultimo.*

To the Colonel Com-  
manding the Bombay Ma-  
rine Battalion on the 11th  
Regiment Bombay Na-  
tive Infantry, Bombay.

"I beg leave to submit for his Excellency's con-  
sideration and future protection, the brave and  
faithful native soldiers mentioned in the ac-  
companying rolls whose gallant services and the  
privations they have undergone during the Bur-

"mese War.

"The roll contains the names of a portion of the Bombay  
Marine Battalion or the 11th Regiment who served on the coast  
of Arracan from the commencement to the termination of the  
war; they were present in the first action with the enemy on the  
'Naaf,' subsequently with me during the desperate action at Chumbla  
afterwards at Arracan and were conclusively present at the capture  
of Ramria and Sandoway at which latter place they formed part of  
the garrison which maintained that post during the most perilous  
state of the war. As the men in question belonged to one of  
the oldest corps in the native army, it became necessary to  
give rank and precedence to its non-commissioned officers over  
those composing the newly raised Flotilla Marine sepoys, as stated  
in roll No. 1 which appointments were confirmed and approved by

"his Excellency the late Commander-in-Chief and his Lordship in Council. My object in bringing these appointments to the notice of the Right Hon'ble the Vice-President in Council is to secure to these gallant officers the permanency of their rank in their ranks in their corps at Bombay, and I consequently earnestly solicit his Lordship's consideration of them to the Commander-in-Chief at Bombay in order that they may be borne in the Regimental Roll as supernumerary officers, until vacancies may occur of giving them permanent rank. I hope I shall be excused for pressing such an object upon his Lordship's notice, when it is considered that the corps in question is one of the oldest in India, and that it has seen more arduous and more foreign service than any native regiment in the Company's army. I have personally been acquainted with its merits and patient endurance for a period of more than forty years' duration.

(A true Extract.)

(Sd.) JOHN HAYES,  
Commodore."

---

*Extract from a letter from the Military Secretary to His Excellency the Commander-in-Chief, dated Head Quarters, Barrackpoor, the 28th September, 1826.*

"In reply to your letter of the 1st instant I have the honor, by desire of the Commander-in-Chief, to transmit a copy of the decision of the Right Hon'ble the Vice-President in Council on the claims of the individuals you have recommended for their services in the Burmese Territory."

---

*Extract from a letter from the Secretary to Government in the Political Department, under date the 22nd September, 1826.*

"I am directed to acknowledge the receipt of your letter of the 11th instant, enclosing copy of a despatch from Commodore Hayes, and to acquaint you in reply, that the necessary communication will be made to the Government of Bombay respecting the officers and soldiers of the Bombay Marine, therein mentioned."

(True Extract.)

(Sd.) JOHN HAYES,  
Commodore.

---

This gratifying testimonial was forwarded through Major General Wilson, Commanding the Presidency Division, to the Adjutant General of the army accompanied by a letter from Captain Hicks, the Commanding Officer of the Marine  
1826.



Battalion, under date the 22nd December 1826 (*vide* Battalion Outward Letter Book) and also by the following one from the Major-General himself:—

“ *Bombay, 26th December, 1826.*

“ SIR,—I derive very considerable satisfaction in transmitting to you for the purpose of being laid before His Excellency the Commander-in-Chief the accompanying documents, setting forth in such honorable terms the bravery, military feeling, regularity of conduct, and useful services of a detachment of the Marine Battalion, belonging to this establishment, and employed during the Burmese War; the case of Havildar Walnac Sumnac and Naique Gunnac Seednac being brought to particular notice.

“ Accustomed, as I have been during the long period of my residence in this country, to witness the willingness with which the men of the Marine Battalion have always proceeded on any public service required of them, while the genuine proofs they have given of their fidelity and undaunted courage on so many occasions have been received by Government with admiration, I naturally feel a peculiar interest in the corps, and therefore beg leave to solicit the favorable consideration of His Excellency the Commander-in-Chief and Government toward the parties now concerned.

I have the honor to be,

SIR,

Your most obedient Servant,

(Sd.) S. WILSON,  
*Major General.*”

TO THE ADJUTANT GENERAL OF THE ARMY, BOMBAY.

The General Orders of the 26th February, 1827, before recorded, was the result of these several representations.

The following details also served during the whole of this arduous war. The men composing them were from three to four years absent from their head-quarters, and they all rejoined with the most honourable testimonials from their several Commanding Officers. The gallantry and good conduct of the native officers, non-commissioned officers, and men of the Bombay Marine Battalion, on every occasion when in actual engagement with the enemy, as well as their steady forbearance and patience whilst suffering under the most severe privations which the nature of the service they were employed upon frequently caused them to sustain, have been declared to be alike conspicuous. These details all returned recommended in the strongest terms to the officer at the head of the Battalion.

*Names of Ships and Enumeration of details.*

Hon'ble Company's Ship of War *Teignmouth*.

One Jemadar Dhawnac Mackinnac, 6th Company.

One Havildar Shaik Adum, 7th Company.

One Naique Dhrumnac Bhaynac, 7th Company.

One Lance Naique Dhrumnac Madnac, Grenadier Company with two Drummers and Fifers and 22 Privates.

Hon'ble Company's Ship of War *Thetis*.

One Colour Havildar Shaik Boodun, 4th Company.

One Naique Malnac Hernac, 2nd Company with 20 Privates.

Hon'ble Company's Ship of War *Prince of Wales*.

One Havildar Tannac Nownac, 7th Company.

One Naique Jumal Khan, 3rd Company, with 16 Privates.

Hon'ble Company's Ship of War *Mercury*.

One Havildar Balnac Dhaenac, Grenadier Company.

One Lance Naique Abnac Gondnac with 18 Privates.

Hon'ble Company's Ship of War *Errand* (employed as a transport.)

One Havildar Hernac Cannac, 2nd Company.

One Naique Essnac Hernac, 4th Company, with 12 Privates.

From the details, three men were killed in action, several wounded, and ten died on the service (most of the latter from severe hurts and fatigue.)

Medals were awarded to the whole of the men composing these

The men of this detachment received afterwards a gratuity of 12 months' batta each.

detachments, and with the exception of the detail on board the *Ernaud* which was not employed as a fighting ship, they all received, by an order of the Supreme Government, additional batta of one quarter rupee per diem from the date of their first reaching the enemy's Coasts until the period of their finally quitting them.

A good proportion of the non-commissioned officers and privates of the men whose services are here recorded were subsequently selected for promotion by the Commandant of the Battalion.

In 1827 the duties of Suprintending Officer of Cadets, together

Extract from General Orders, 4th April 1827.

with the salary and establishment thereof were transferred to the Officer Commanding the Marine Battalion.

No. 449 of 1827. In the General Order of the 3rd April 1811, the

Extract from General Orders, 5th Jany, 1828.

Governor in Council had the pleasing duty of expressing his high approbation of the conduct of a detachment of the Marine Battalion serving

on board the Hon'ble Company's cruizer *Aurora* when captured by the French on the 21st September 1810, in resisting the many persuasive and coercive means used to induce the sepoys of that detachment to swerve from their allegiance to the Hon'ble Companys and to enter the French service among the persons enumerated in that order and promoted in the rank of Naique was Dhownac Muckinnac Private, who having subsequently risen progressively to the rank of Subadar and entitled himself to the further consideration of Government by exemplary conduct in every grade of his promotion through a variety of arduous service, but particularly, whilst in command of a detach-

ment of his Battalion during the whole of the Burmese War, died in the Battalion Hospital at Bombay on the 3rd April last.

The circumstances of the Subadar's death, they do not entitle his widow to any provision from Government, but in consideration of the peculiar claims of the deceased, the Governor in Council is pleased to extend to his widow the same indulgence as was granted in General Orders, bearing date the 6th June 1820, to the widow of Dhandnae Havildar, also one of the detachment on board the Aurora and directs that Nimbee, the widow of the late Subadar Dhownae Muckinnae of the Marine Battalion, be accordingly admitted from the date of her husband's death on the Pension List, subject to the confirmation of the Hon'ble Court of Directors, on an allowance exceeding by one Rupee what would have been given to her under ordinary circumstances, if entitled to a Pension under the existing Regulations."

In July 1831 medals were received from the Adjutant General of the Army for the purpose of being distributed to the different ranks of the Marine Battalion who served during the Burmese War.

In conformity with instructions from the Supreme Government a complete company was sent to the Isle of Socotra under the command of Captain Bailay of the 5th Regiment, to protect a dépôt of coals and otherwise in furtherance of steam navigation; the detachment suffered so much from sickness, that in June 1835, it was relieved with the exception of about sixteen men, who were considered well enough to remain. This detail under the command of Captain Corsellis of the 18th Regiment suffered much loss, casualties continuing to take place amongst the men of the old detachment, only this improvement was attributed to a change in the site of the cantonments from the low land to the hills, a guard only having been left over the stores on the coast.

Nov. 1835.—The Force was withdrawn altogether in November 1835.

His Excellency the Commander-in-Chief sanctioned the abolition of the terms and distinctions of the "Grenadier" and Light "Companies" and directed that in accordance with the practice observed in the Royal Marines, the eight Companies should be distinguished only by their respective numbers.

It having been brought to the knowledge of Government, *vide* Commanding Officer, letter dated 18th March, that there were about 240 men of all ranks in the Battalion whose caste-prejudices prevented their service afloat, they were ordered to be turned out of the Battalion. Some of the men were transferred to other Regiments with their own consent, some without. Others were removed to the Veteran Battalion and Pension List, others discharged, some with, and some without, gratuity; the commissioned officers, some of the non-commissioned officers, and few of the privates (orderlies) being allowed to remain in the Battalion.

On the 28th May a party of the following strength proceeded to the Island of Karack forming part of the field force under Colonel Sheriff:—

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| May 1838.                               |                                         |
| September 1839.                         | One Subadar.                            |
| Detachment consisting of                | Two Jemadars.                           |
| one Havildar, two Naiques,              | Eight Havildars.                        |
| two Drummers and Fifers,                | Five Drummers and Fifers.               |
| and twenty Privates, serving            | One-hundred-twenty-three Rank and File. |
| on board the <i>Coote</i> and           | One Bheastie.                           |
| Mahi, took part in the capture of Aden. |                                         |

A Party which left the head-quarters in May 1838 and formed part of the field force at Kurrack returned to Bombay on the ship *Lord Castlereagh* which was wrecked at the mouth of the harbour, and one Jemadar, three Havildars, three Drummers and Fifers, and 13 Privates drowned.

Detachments in the *Satellite* and *Plant* engaged with the enemy during the attack on the Hyderabad Residency prior to the Battle of Meanee; one Private wounded. Detachment on board the *Comet* and *Meteor* present at the entrenched camp during the Battle of Hyderabad.

Agreeably to instructions from Army, head-quarters, and by permission of the Hon'ble the Commander-in-Chief of the Garrison, Subadar Major Jannae Nownae Bahadoor of the Marine Battalion will be invested with the Order of British India this afternoon, on which occasion the whole of the corps in garrison will parade at 5 o'clock in Review order.

Captain Robert St. John promoted to Major from the 16th Garrison Order, 4th August 1845.  
October 1843.

One Subadar, one Jemadar, one Colour Havildar, five Havildars, six Naiques, two Drummers and Fifers, one Bheastie, and five Lance Naiques, and ninety-five Sepoys proceeded on service to Kotree in Scinde on the 10th and 11th January 1846.

Detachments of the Marine Battalion consisting altogether of one Colour Havildar, three Havildars, six Naiques, and ninety-six Privates, served during the Campaigns of 1848 and 1849 and obtained medals.

In May 1851, on the occasion of the H. C. S. "*Falklands*" foundering on her voyage to Kurrachee, the Marine who was on sentry over the Treasure Chest, by name Babnae Deepnae, never left his post until the vessel went down under him and even then he contrived to save the bag of Rupees under his charge. His conduct having been spoken of most highly he was promoted to Naique.

General Garrison Order,  
18th September 1851.

A detachment consisting of

1353 and 1854.      1 Naique,  
4 Drummers,  
4 Fifers,  
7 Privates,

serving on board the Hon'ble Company's steamers, *Feroze*, *Moozaffur*, *Berenice*, *zenoba*, and *Sesostriis* were present in the Rangoon seas during the second Burmese War, and received medals for their services on the occasion.

Detachments on board the undermentioned ships were present at the taking of Mohumra under Lieutenant-General Sir James Outram, K. C. B.  
28th March, 1857.

*Feroze*, *Semiramis*, *Assaye*, *Ajdaha*, *Victoria*, *Clive*, *Falkland*.  
Lance Naique Babnae Sumnak was killed, and Havildar Ragnak Esnak and Private Lucknak wounded.

A detachment of the Battalion on duty at Multan consisting of Naique Jannae Dhonnae No. 8 Company,  
June, 1858.      Private Balnac Dhurnnac No. 4, Balnae Jannae

No. 9, Bicknac Cooteennac No. 9, Balmater Ramater Yesnac No. 8, Bioknac Sonnac No. 8, Ramnac Babnac No. 7, Aunnac Jannac No. 10, with a small Detachment XI Regiment Punjaub, N. I. was engaged in defending the Treasure Chest when the Bengal Regiment broke out into open mutiny at Multan, and killed twenty-six of the mutineers for which gallant conduct the Naique was promoted Havildar; Privates Aumnac Jannac, Bicknac Sonnac Gondnac Pitnac, Balnac Jannac, and Bicknac Coottennar were promoted to Naiques; and Privates Balmater Rammater Dhurnnac, and Rammac Babnac to Lance Naiques. Havildar Jannac Dhonnac and Lance Naique Ramnac Babnac were awarded the third-class order of merit.

A detachment consisting of Subadars Sheik Ysmall and Shaik

September, 1859.      Raimon 1st Jemadars, Shaik Ysmall and Joiow  
Custie 200 R. and F. under Lieutenant and

Acting Adjutant Roberts of the 2nd Grenadier Regiment N. I., accompanied the force sent for the suppression of the Waigurs at "Bheyt" and Dwarka, and assisted throughout the operations there.

The above detachment returned to head-quarters on the 2nd  
2nd November.      November, and had one Private killed, one Havildar and one Private wounded.

Letter No. 1485, dated Mahableshwur, 2nd April 1861, from the

5th April, 1861.      Adjutant-General of the Army, was received at head-quarters on the 5th April, forwarding Resolution of Government, No. 888, of 26th March 1861, directing the reduction of detachments on board sea-going vessels and also of the strength of the Battalion to:

*Viz. :—*

|                  | <i>Regt.</i> | <i>Company.</i> |
|------------------|--------------|-----------------|
| Subadar Major    | 1 }          | 1               |
| Subadar          | 7 }          |                 |
| Jemadars         | 8            | 1               |
| Colour Havildars | 8            | 1               |
| Havildars        | 32           | 4               |
| Naiques          | 40           | 5               |
| Privates         | 600          | 75              |
| Bheastics        | 8            |                 |
| Boys             | 24           |                 |

General Garrison Order,  
26th March 1861.

By a subsequent order the Battalion was allowed to have 50 Privates as supernumeraries. Total, 650.

The following Government General Order was published on the August. Battalion being incorporated with the line Regiments.

No. 402 of 1861. In consequence of the reduction of the 29th, 30th and 31st Regiment N. I. and the 2nd Regiment of Jacobs' Rifles, and in assimilation with the plan adopted in Bengal with the sanction of the Supreme Government, the Regiments of Native Infantry of the Bombay Army will be designated in future as follows:—

"The Marine Battalion is brought into the line of Native Infantry Regiments, and is designated the 21st Regiment Native Infantry or "Marine Battalion."

In 1865, with the sanction of Government Dr. Livingstone having called for volunteers to accompany him on his exploring expedition to Central Africa, forty men of the Regiment offered their services. The following men were selected and the entire party left Bombay for Zanzibar in January, 1866 :—

|       |                              |
|-------|------------------------------|
|       | Colour Havildar Shaik Ahmed. |
|       | Lance Naique Shaik Mullang.  |
|       | Private Khoada Bux.          |
|       | „ Esmall Khan.               |
|       | „ Shaik Curreem.             |
|       | „ Shaik Khan.                |
| 1866. | „ Shaik Purun.               |
|       | „ Pandnac Ramnac.            |
|       | „ Jaynac Gunnac.             |
|       | „ Ramnac Lucknac.            |
|       | „ Bawajnac Gunnac.           |
|       | „ Ramnac Bhewnac.            |

In the month of March 1866, the Battalion furnished a party under Subadar Jumaull Khan, afterwards increased to 102 Rank and File to proceed on service on board H. M.'s steam ship *Coromandel* board for the Persian Gulf and Muskat. This party returned on the 6th of June 1866, leaving small parties on board the Gunboats, *Hugh Rose* and *Clyde*.

On the 20th June and three following days the Regiment furnished both by night and day fatigue parties to assist at the wreck of the *Diamond*, pilgrim ship. The Commander-in-Chief thanked the Commanding Officer and men in General Orders for the prompt assistance rendered, and the good and willing service of the different parties.

G. O. C. No. 366 of  
17th April.  
G. O. C. No. 378 of  
20th April.  
G. O. C. No. 519 of  
7th June.

A detachment consisting of one Subadar, one Jemadar, one Colour Havildar, four Havildars, six Naiques, seventy-four Privates, one Bheastie and one or two

Hospital Assistants, proceeded with the Pioneer force to Abyssinia.

Lieutenant Becke proceeded to join and take command of the above detachment.

7th October.

Lieutenant Becke and his detachment returned from Abyssinia, received great praise from Lord Napier of Magdalla and Brigadier-General Merewether for the zeal and intelligence displayed by them in executing the various works entrusted to them. Lieutenant Becke was thanked in Lord Napier's Despatches. The detachment lost 12 Privates and one Bheastie by sickness.

16th June 1868.

Subadar Shaik Nuthoo No. 1 Company admitted to the second class of the order of British India with the title of Bahadoor for his services in the Abyssinian Campaign.

Garrison General Order,  
4th August.

List of Officers who have commanded the 21st Regiment or Marine Battalion since its organization in 1777 :—

|                                      |     |     |     |              |
|--------------------------------------|-----|-----|-----|--------------|
| Captain Jameson                      | ... | ... | ... | 1777 to 1778 |
| Lieutenant Hudson and Captain Samber | ... | ... | ... | 1779         |
| Captain Moore.                       | ... | ... | ... | 1780 to 1787 |
| " McPherson                          | ... | ... | ... | 1787 to 1791 |
| " Williamson                         | ... | ... | ... | 1791 to 1796 |
| Major Marshall                       | ... | ... | ... | 1796 to 1797 |
| " Horne                              | ... | ... | ... | 1797         |
| " Williamson                         | ... | ... | ... | 1797 to 1798 |
| " Feife                              | ... | ... | ... | 1799         |
| " Buchanan                           | ... | ... | ... | 1800 to 1802 |
| Lieut. Col. Williamson               | ... | ... | ... | 1802 to 1804 |
| Major Hunt                           | ... | ... | ... | 1804 to 1807 |
| " Lewes                              | ... | ... | ... | 1807 to 1811 |
| " Hornby                             | ... | ... | ... | 1811 to 1812 |
| " Lyall                              | ... | ... | ... | 1812 to 1817 |
| Lieut. Black                         | ... | ... | ... | 1817         |
| Capt. Farquharson                    | ... | ... | ... | 1817 to 1818 |
| Major Egan                           | ... | ... | ... | 1818         |
| Lieut. Col. Llewellyn                | ... | ... | ... | 1818 to 1819 |
| " McKinochie                         | ... | ... | ... | 1819 to 1823 |
| Lieut. Clarke                        | ... | ... | ... | 1823         |
| Major Brooks                         | ... | ... | ... | 1823 to 1824 |
| " Man                                | ... | ... | ... | 1824 to 1826 |

|         |          |     |     |     |              |
|---------|----------|-----|-----|-----|--------------|
| Captain | Hicks... | ... | ... | ... | 1826 to 1833 |
| "       | Parr ... | ... | ..  | ... | 1833 to 1835 |
| "       | Mant ... | ... | ... | ..  | 1835 to 1838 |
| "       | Chalmers | ..  | ..  | ... | 1838 to 1844 |
| "       | St. John | ..  | ..  | ... | 1844 to 1846 |
| "       | Parsons  | ..  | ... | ..  | 1846 to 1847 |
| "       | Shepherd | ..  | ... | ... | 1847 to 1848 |
| "       | Rolland  | ... | ... | ... | 1848         |
| "       | Hart ..  | ... | ... | ... | 1848 to 1855 |
| "       | Barrow   | ... | ..  | ... | 1855 to 1858 |
| "       | Cahusac  | ..  | ..  | ... | 1858 to 1860 |
| "       | Barrow   | ..  | ..  | ... | 1860         |
| "       | Leckie   | ... | ... | ..  | 1861         |
| Major   | Thacker  | ..  | ..  | ..  | 1861 to 1864 |
| "       | Muter..  | ..  | ..  | ..  | 1864 to 1866 |
| Colonel | Thacker  | ..  | ..  | ..  | 1866 to 1869 |
| "       | Cahusac  | ... | ... | ... | 1870 to 1871 |

---



## TRANSLATION.

*Belgian Military Conferences,*  
(No. 1, 1st Series of 1870.)

**“Infantry Tactics.”**

BY CAPTAIN CHARLES PONTUS,  
*Of the Grenadier Regiment.*

TRANSLATED BY MAJOR W. SIDDONS YOUNG, *Bengal Staff Corps.*

THANKS to the discussions which, since the campaign of 1866, have taken place in military circles, throughout Europe, there is no longer a military man, however indifferent to his profession, who does not recognise as the causes of Prussia's astounding success, not only the start she had gained over her rivals by her breech-loading rifle, but also (and still more) the tactical superiority of her infantry movements. Consequently, all the European Powers, whilst immediately after this campaign arming their troops with rapidly-firing weapons, have also newly examined the Prussian tactics, and introduced in their own military organization those modifications which in great measure have been suggested by experience derived from the results of recent campaigns.

Nevertheless, even before the thunder-stroke of Sadowa, the attention of military circles had been drawn to the exigencies of modern tactical movements. Several writers (and foremost among them, a General officer of our own army, whose studies are at this moment considered to embrace the most eloquent plea yet published in favor of the new system of manœuvres): several writers, we repeat, had sufficiently demonstrated the urgent necessity that existed for laying aside the old method of manœuvring. Europe had been forewarned: for the Danish campaign, of 1864, was in itself a revelation.

How came it, then, that, disdaining the teachings of experience, nations still clung to the observance of exploded military principles?

The reason is to be discovered in the resistance of that *vis inertæ* known as “tradition:” and also in the law (as painful as it is absolute) which prescribes that great wars—in matters military—as oft-repeated discussions—in matters scientific—are the preliminaries essential to the subsequent attainment of rapid progress.

The glory and the merit of Prussia lie in the fact that she foresaw, in the midst of profound peace, the great tactical advantages to be derived from an armament brought to a high pitch of perfection: and, again, in the fact that, (with an admirable foresight and calculation of

the grand results that could thereby be accomplished) she had the courage to carry through a complete and thorough change in her own old method of manœuvring in the face of an enemy.

Already, so long ago as 1854, General Renard remarked :—"Woe to the nation that shall allow her army to decay : that shall fail to keep her armaments on a level with the attainments of modern military science !"

In 1859, General Von Brandt expressed himself thus :—"We are on the eve of a new era in tactics : and it may safely be predicted that the State which shall the most perfectly comprehend and seize the scientific (military) modifications of the day, will be at the head of the world."

The results of the campaign of 1866 have proved the truth of these views.

We will now endeavour to give a succinct *précis* of the methods which—confirmed by the experience derived from recent wars—prevail at this moment in the majority of armies.\*

---

#### *On the Tactical formation of Troops.*

"Since first the art of war existed," says Colonel Lecomte, "two formations of troops have held rival claims to supremacy : viz., column formations and line formations."

The question as to the best formation for adoption, when advancing against an enemy, is, beyond doubt, one of the most important that can present itself. This question is, and has been, with military men the subject of ardent controversy. One party has a preference for deep formations, as possessing more of regularity, of firmness, of *momentum*. Another party prefers lighter formations, as taking up more ground, and as being better capable of preparing—by their more extended line of fire—for a subsequent attack with the bayonet.

But, on the one hand, deep columns offer, in the presence of artillery, dangers which improvements in fire-arms serve but to augment—whilst, on the other hand, line movements are slower, more difficult to maintain with regularity, and have a tendency to degenerate into disorder. The majority of European Powers, after having considered the above points, have adopted a medium formation which appears capable of solving the problem satisfactorily.

---

\* [Note.—We warn our readers that we are not about to concern ourselves with any but the secondary (auxiliary?) tactics of infantry, with (in fact) those tactical movements which Napoleon declared should be changed every ten years. The higher range of tactical science is less subject to variation. It is, and always will remain, much what it ever has been—namely :—To economise one's own forces ; to bring forward as little of them as will attain the purpose contemplated ; to compel the enemy, if possible, to bring out his reserves ; to keep back one's own reserves in readiness to fall with them, at the fitting moment, on the enemy's weak points.

These are, to-day as hitherto, the fundamental rules of the military art.]

In manœuvres taking place beyond artillery range, battalions are, as heretofore, to be formed up in columns having a front equal to that of one company : but so soon as the men come within the range of cannon, the battalions—if in the open—are to form double-company columns : whilst, if they come to broken ground, the troops will revert to single-company formation of column.

Double-company columns, whilst having more power of resistance than a simple deployed line, admit (as in line formation) of the employment of the strength of fire of the whole of the four component ranks :\* whilst they (the double columns) are not, any more than is the ordinary column of manœuvre, exposed to the ravages of projectiles. Company columns answer admirably during movements over cultivated or broken ground, and for purposes of attack or defence of individual points, they adapt themselves easily to every formation of the ground to be occupied. Even in the open, they offer to artillery a smaller mark than would a compact battalion. They can each be rapidly formed into square—and they are a good formation for detached parties, for isolated attack or defence, and for the formation of minor reserves.

“In none of the older formations,” continues Colonel Lecomte, “has the battalion the mobility, suppleness, or the cohesive power which exclusively belong to the company column.”

These two modes of formation (*i. e.*, battalion columns on an extended front, and company columns) when employed in movements in the presence of an enemy, satisfy, in the highest degree, the new tactical requirements thus formulated by Charles XV, king of Sweden.

“The formation of troops,” says the above august writer, “should in future be such that it should be impossible to destroy the men, *en masse*, before they could reach the enemy and be able to make an impression on him.” It cannot be denied that the breaking up of a battalion into (double company) columns has a tendency to withdraw, too easily, the men from the control of their superior officers. But, it may be asked, is it possible to avoid, on the modern system of giving battle, the sub-division of forces, or to preserve intact, at all times, their inter-connexion? Whilst, in the Bohemian campaign, in 1866, the fluctuation in the fight sometimes concentrated on the side of the Prussians, companies or even half-battalions of different corps from separate parts of the field, we find that, at the battle of Custoza (Italo-Austrian campaign) where similar circumstances of ground and position should have produced similar results, a complete dispersion of forces occurred on the side of the Austrians, in place of concentration.

Far from seeing any danger in the establishment of small independent bodies of troops, we hold that such formations give hope of evading numberless causes of anxiety and panic, which are so numerous and, so

---

\* From this it appears that each column is to consist of four companies in all, two in front and two in rear.—W. S. Y.

to say, inevitable now-a-days when the order of battle is liable to variation at almost every step, owing to the necessity for firmly holding the ground occupied: and we consider, besides, that it is no slight advantage for an army that the commanders of its minor sub-divisions should acquire the knowledge which would enable them to support each other, even irregularly, during critical moments.

"A corps," says a German writer, "whose smallest detachment are capable of independently holding their own over a broken country, possesses, *ipso facto*, such self-control, that a general engagement on open ground causes it no anxiety, and, in fact, the new troops which appeared so strongly scattered into fragments at Nachod, on the 27th June, 1866, marched on the 28th to Skalitz, and on the 29th to Schweinschädel, in two such compact and regular lines as were never excelled on the parade ground itself by the Prussian troops of older days.

"The reverse of the above open system (namely, keeping troops always *en masse*) appear to us to have the fewer advantages an army accustomed simply to move *en masse* and to perform deployments formally executed upon a predetermined plan of battle, would assuredly sometimes find itself with its component parts confusedly intermingled, whilst removed from the immediate supervision of its head, if circumstances should bring about a series of isolated engagements. Under such circumstances, the amalgamation above referred to would speedily degenerate into a confusion which might easily bring about the destruction of the different portions of troops thus joined together.

---

#### *On the advanced line—Skirmishers.*

Under the old systems skirmishers did not properly constitute a distinct combatant force. They served to cover the movement of the battalion, on which they generally fell back so soon as the engagement grew warm. The supports and reserves were purely passive forces, which took no share in the engagement of their skirmishers.

The principle of the new system (of skirmishing) is entirely different. The supports and reserves have not now the sole duty of joining skirmishers in a precipitate rally. They are bodies intended to gradually reinforce the engaged line of skirmishers: they advance with them: move in unison from point to point, and endeavour, by a more and more close and penetrating fire, to generate in the enemy's ranks those panics (or confusion) which alone, henceforth, will permit of assaults being successfully delivered by large masses of men.

The advanced line, thus constituted, helps to give to a battalion that element in its composition, of which it has hitherto felt the want, *viz.*, *depth*. It is rendered thus capable of successive efforts, and is given

the opportunity, when acting separately, of combining front and flank attacks.

Regarding the deployment of skirmishers, a happy innovation and one rich in advantages of many kinds, is that which consists in keeping the men in groups, each composed of a squad or half squad, commanded by a sub-officer or a non-commissioned officer. The advantages presented by this group system over that of the extended chain of skirmishers are as follows :—

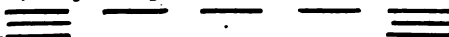
1st. The carrying out more thoroughly and effectively of orders affecting the skirmishers.

2nd. The avoidance of a waste of ammunition, the leader of each group having it in his power to regulate the fire as required by circumstances.

3rd. The allowing of a more rational utilization of natural cover.

4th. The offering to every skirmisher the moral support afforded by immediate contact with his comrades in the squad :—a support which will increase his sense of security, and his confidence in success.

5th. The offering to stray charges of cavalry readily-formed circles, capable of sufficient resisting power.

When the companies of the advanced lines are no longer required to cover the front, they are placed as reserves in rear of either flank of their battalion. . By this means, the battalion always shews an invariable length of front; acquires an increase of strength, which the abolition of the "third rank" has rendered necessary, and the withdrawn skirmishers can again be extended without leaving gaps in the line.

This order of battle (the placing in *rear* of the battalion of the retired skirmishers?) which appears to be new, has for its authors Méné-Durand, Joly de Maizeroy, and Rohan, all famed for their disputations in the last century, in favor of the French (or "*perpendicular*") disposition of troops against the followers of Guibert, who were in favor of the *linear* order of arrangement.

The armies of the Republic and of the Empire, (inheritors of the principles of the French school of tactics; principles which ensured them 20 years of victory) only, however, adopted the new method above described in part, and continued to range their battalions in single line. It was only later, during the leisure which followed peace, that the illustrious Generals of the period, recalling past discussions, brought back the system of tactical manœuvre into the groove traced for it by Méné-Durand, and constituted themselves the warm promoters of the order of battle of which we have just cited some of the principal advantages.

*Offensive Tactics.*

If, after the campaign of 1859, in Italy, we heard the Austrians declare positively "*that, henceforth, safety was only to be found in the bayonet,*" professing this doctrine so heartily as to bodily insert it in their "regulations," not less earnestly do we now find announced by them this diametrically opposite—and at last equally absolute—principle: "*that the tactics of the future will consist in engagements on selected ground, and in a fierce and steadily sustained fire.*" A German author has defined this theory by stating "*that a sustained and rolling fire has become the "white arm" of infantry troops.*"\*

Now, without permitting ourselves to be carried away by admiration for this new evolution (rapid firing), we are compelled to recognise the fact that the moral effect of the system of "*attack*" has greatly lost ground, and the General who should still hold to the ancient belief "*that a decided will compels events,*" would run the risk of incurring grave disaster. On the contrary, henceforth, an attack with the bayonet, undertaken too early in the day, would invariably fail against troops, as yet intact, delivering their fire within easy range. Unless, under certain exceptional conditions, such as night-attacks, surprises, &c., the bayonet charge will henceforth only be of use in *securing the advantages already obtained by a sustained and well-directed fire.*

The judicious employment of tactical movements which at once favor both an advance of the troops and an extended delivery of fire, the art of utilizing fully the slightest undulations of ground (as cover), the effect of masses of troops combined and protected to the very last moment by clouds of skirmishers: opportune demonstrations on the enemy's flanks, and, finally, calmness and skilfulness in delivering fire; these it is that will henceforth ensure success to an attacking force.

The more the enemy's fire grows searching and deadly, the more will it be the rule for troops to lie down under fire. Beyond the obvious advantage obtained in this position of being able to avail of the smallest undulations of ground, is the fact that the smoke from discharges, in rising, always first disengages itself from the earth; so that the man who may be lying down flat can always partially see his enemy, when the soldier standing upright is enveloped in smoke and can see nothing. We should attach a high importance, on the drill ground, to exercises teaching men to rapidly take up a recumbent position, and to fire in that position without rising to aim or to load.

---

[*Note.*—The term "*arme blanche*," 'white arm,' refers to such weapons as swords, rapiers, &c., as contra-distinguished from "*armes noires*," i. e., weapons discharging projectiles, whether rifles, pistols, or cannon, &c. In the French fencing saloons the rapier is termed "*arme blanche*," and it is to its *deadly qualities*, as shewn in numberless duels, that reference is above made when the rapid fire of the modern rifle is compared to an "*arme blanche*."—W. S. Y.]

The skill acquired in thus making use of their arms, in all positions, will often finish, in future, to a surprised party the means of getting the upper hand of an adversary less thoroughly drilled.

We may perhaps be permitted to cite a case in point, taken from the battle of Sadowa. A Prussian company had issued from a wood near Nieder-Prim, and was about to form up, when its commander saw an Austrian battalion emerging from a hollow within short range. Beyond doubt the situation was most critical. On a signal from the captain, the entire Prussian company threw themselves down on the ground, the enemy's volley passed harmlessly over their heads, and then a short and well-sustained fire compelled the Austrian battalion to a precipitate retreat.

If we keep in mind the new relations between attack and defence—(deduction being made for the numerous exceptions necessitated by the configuration of the ground, and by the incidents of each individual fight)—we could picture to ourselves, somewhat after the following manner, the order of the several occurrences incidental to an offensive attack.

The two companies of skirmishers, of each battalion of the first line, go forward; divided into "an advanced line," "supports," and "reserves." During the march the officers and sub-officers who accompany the extended party, proceed in advance of the connected groups of skirmishers, in order to examine the ground to be passed over, and to reconnoitre the enemy's position.

Fire is generally opened by the best marksman prior to reaching the more searching portion of the enemy's line of fire. As the party continue to advance, the other skirmishers, instructed in their distance and range by the previous essays of the picked shots, take part in the firing. The skirmishers commence to lie down in groups; no longer gaining ground except by starts—by bounds as it were,—the men taking care not to expose their full height too much to the enemy's fire. They arrive, thus, re-inforced by their supports, to the nearest point of shelter to the position about to be attacked and carried.

So soon as the proximity of the enemy's skirmishers admit of it, isolated groups of skirmishers or still larger bodies attempt, if possible, a flank attack: or repulse by an energetic assault any of the enemy's sub-divisions brought too far forward.

The reserves follow at an interval of about 150 paces: but so soon as the skirmishers and supports have seized upon the nearest approaches to the enemy, they (the reserves) fall into line with them: and all endeavour by an accelerated fire to thrust back the enemy's skirmishers, and to break the resistance of the hostile lines which were firmly awaiting their onset.

At this moment, the main body, emerging from the canopy of smoke raised by its own skirmishers, deliver a deadly discharge upon the enemy's line, and instantly advance to overthrow him.

During this charge, the skirmishers, keeping up their fire, accompany the battalion and endeavour to gain the enemy's flank. The second échelon of each column follows the first échelon as its reserve.

To resume. The principle of an offensive attack is to advance, *under cover*, to a point so close to the enemy's position, as to admit of the possibility of attacking him with the bayonet, without giving him, so to say, time to make use of his heavy fire. But, as may well be conceived, this method of assault is only practicable when the columns of attack are protected to the very latest moment by the fire of a heavy cloud of skirmishers covering the front.

At the moment of reaching the enemy, troops of all nations utter war-like shouts. The Prussian regulations, however, alone actually enjoin the use of these shouts—and in the following words: "When the battalion shall arrive at about 12 paces from the enemy, its commander shall give the order 'Charge bayonets! Double!' At this word of command the two foremost ranks shall depress their bayonets (come to the charge) and rush upon the enemy—uttering with force the cry—'Hourra!'"

In France, where the soldier abandons himself only too readily to his ardour, and to a sort of exultation, which has need of restraint rather than of excitation, the regulations enjoin calmness and silence.

General Trochu says:—"The whole secret of war consists in carefully regulated rapidity; (of manœuvring), order, and silence." And he adds significantly:—"In regard to silence, indispensable in battle, our education has yet to be begun."

In the instructions given to the French army of Italy, in 1859, the Emperor's Chief of the Staff insists, most particularly, on the preservation of silence when attacking. "At thirty paces from the enemy fire is to be opened: then charge with the bayonet amidst the deepest silence." The temperament, the character, and, to a certain degree, the training of troops, will explain the necessity for the above different instructions.

---

### *Defensive Tactics.*

Defensive tactics have undergone far less modification than have the tactics of offence: the old and excellent rule as to reserving fire till it can be employed at a short telling range having been strengthened, rather than weakened, by the introduction of breech-loading arms.

It is in the nature of things, and all military history proves the fact, that all improvements in arms which have for their result increase of precision, range, and of rapidity of discharge, are especially profitable to troops acting on the defensive.

A defensive force on protected and sheltered ground, is in a posi-



tion to deliver its fire with calmness, and consequently more effectively than its assailant: it can calculate the exact range over which it will have to fire: and, in fact, it is in a position to advantageously economise its ammunition, knowing it will be able to use it, after a deadly fashion, when the enemy comes within short range.

Now-a-days, when troops are everywhere armed with rapidly-firing arms, the condition most conducive to a successful defence is to oppose, to the firm resolve of the assailant to attack with the bayonet, the equally firm determination not to yield ground.

Of what value would troops be that would allow themselves to be frightened by a "charge" which the assailants would have to execute, spite of every effort to advance under cover, for a distance of 100, or even 150 paces: when the charged party know that they have time to fire from five to six rounds, and that afterwards they can still meet bayonet with bayonet?

The task of the modern officer should be to convince each of his men that nothing, under such circumstances as the above, could be more dangerous than to yield ground: for it would be to expose himself helplessly to the close fire of the enemy, and to run the inevitable risk of utter annihilation.

We will now endeavour to follow the general progress of an engagement on the defensive—allowance being made, as in the case of an offensive attack, for difficulties of ground and for peculiar phases of the combat.

The main force (first line), most generally deployed, is as much as possible protected by natural cover or by trench work. It has fixed, in advance, upon an advantageous range of fire along its front—where the assailants under a close fire from the line, can only advance fully exposed to view.

The skirmishers (of the defence), well scattered, cover with their fire the approaches to the position; the officers and sub-officers reconnoitre the neighbourhood; and measure, if they have time, the distance between the various points of approach in their front.

The fire of defensive skirmishers is subject to the same rules which govern that of skirmishers on the offensive, *viz.*, the long range firing is confided to the best marksmen; the inferior spots not joining until the enemy has arrived within point blank range: and then the firing is by volleys in preference to individual shots, unless the enemy should advance completely exposed to view.

The moment is favourable for volley-firing by skirmishers, when the opposing skirmishers leave their cover to gain ground to the front. It is not necessary to require in volley-firing by skirmishers that simultaneous discharge which is properly insisted on in firing with closed ranks: on the contrary, it should be avoided, for it is sufficient that the skirmishers be attentive to the voice or the signals of each leader of a

group; and that the majority of them should know how to profit by that momentary interval of time during which their fire can produce its most crushing effect. A discharge executed under these last conditions is, to all intents and purposes, a volley.

In proportion as the offensive movements progress on the side of the adversary, the (defensive) skirmishers, profiting by every bit of cover, retire little by little, and establish themselves along the line selected by their supports: the sections in support now join in the fire.

The enemy, by means of his reinforcements, having succeeded in mastering the fire of the defence, the advanced line (defence skirmishers and supports) retire on the line of reserves: the whole then commence a rapid fire.

If the enemy, favoured by the formation of ground, succeeds in withstanding this fire, and continues his advance, the companies of skirmishers (defensive) retreat round both flanks of the battalion, and unmask it. The latter instantly opens fire and prepares to charge. This charge, however, should never be executed until the attacking forces have been made to feel the effects of a rapid fire at short range.

To sum up. The main principle of "the defensive" is never to open fire (along the main line), but at short range, and after the skirmishers have inflicted as much loss as possible on the attacking force, to act on the offensive for only very short periods, and to resume the defensive as speedily as possible.

*On the superiority of an active defensive attitude over a plain offensive one.*

The superiority of an active defensive position over a simply offensive one, is due to the recent great advance in the armament of troops—to a better employment of fire in the defence of position; and to that imposing charge from a defensive to an offensive attitude made use of by an attacked force when it has disorganized its opponents, whilst advancing to the assault, by a volley at close quarters.

Formerly, indeed, the offensive attitude possessed an incontestable superiority over the defensive. A force advancing resolutely on the enemy who awaited it, unmoved, had but little to fear from its efforts, and reached it in full possession of all the moral and physical advantages inherent in a bold advance.\*

\* Here follow a number of quotations from various military authorities, illustrative of the gradual decline of the offensive system of tactics and the advance of defensive system—owing to the recent vast improvements in armaments. I have thought it unnecessary to translate these quotations, as they possess only a secondary interest, as compared with the live flesh and blood views of the writer of the pamphlet in hand.—W. S. Y.

*Disposition of troops to receive cavalry.*

All preparations made to receive cavalry should be governed by this rule: that infantry should receive a charge of horse in the order in which it (the infantry) may at the time happen to find itself drawn up; or else in a formation requiring the smallest possible amount of preparatory manœuvring.

"These formations" (says the author of "*The French Army in 1867*,") "are essentially formations of urgency and full of danger. Their unique characteristic should consist of calmness combined with order; a double condition imposed upon them by their simplicity and by the necessity for the utmost degree of rapidity of execution. Infantry forces that should manœuvre in presence of an approaching charge would be lost.

"The best defence of infantry against cavalry lies more than ever in the employment of fire at short ranges. It is owing to this fact that a battalion having its flanks well covered need not hesitate to receive a cavalry charge in line. History proves the truth of this by many examples.

"The strength of each of the squares to be formed on the protected flanks of a force in order of battle should, at most, be that of one battalion. Two or three small squares in *échelon*, flanking each other, present an infinitely more imposing defensive attitude than that displayed by a single large square. Cavalry would hesitate to face a combined front and flanking fire, and the destruction of one of the squares would not necessarily involve the ruin of the others.

"It cannot be denied that the present rapidity of fire forbids absolutely, for the future, the use of *solid* squares. In such squares the men who form its outer walls can alone make use of their arms; whilst those in the centre find themselves condemned to a cruel immobility, and exposed uselessly to the fire of the enemy's artillery. 'Does, then, density,' says General Trochu, 'so much talked about, count really for anything in the inert resistance to be opposed to an external shock such as a cavalry charge driven home? The ignorant in military matters imagine that cavalry act by simply hurling themselves against the force of infantry opposed to them by penetrating inside, and then by dispersing the broken mass by the aid of their horses' chests, and by their sabres or lances.'

"They believe, again, that, in charges of opposing bodies of infantry those who meet impale themselves on each other's bayonets, in the midst of an Homeric struggle where blood flows in torrents!! In both the one and the other instance, the individual attacks, with either the sabre or the bayonet, are but isolated, rare, and accidental occurrences. The victory is gained by the moral not the material shock of the encounter. For instance, should the infantry force not succeed in demoralizing, disorganizing, and finally routing the attacking cavalry, by a firm attitude and by a well-delivered fire, it (the infantry) is lost

before even a man composing it shall have felt the edge of a sabre! For the men would become flurried, and would lose all self-confidence. They would huddle together like a flock of sheep. Elbow to elbow, *i. e.*, joined hopelessly together, the organization which constituted their strength would be destroyed, and in this state they would be surrounded and made prisoners.

“In such a struggle, such a scene of moral coercion, what would avail depth of ranks, or the agglomeration of a dense body of men, but to prepare defeat and terrify the soldiers by the immensity of their losses? Should we not, rather, secure the benefit of moral ascendancy over the enemy by being able to deliver volleys terrible in proportion to the extent of front from which they proceed?”

The plan which consists in lying down flat in the face of a heavy fire can also be happily employed in receiving a charge of cavalry intended to be pushed home. This plan will be made use of all the more freely in the future, since the improvement in the manufacture of arms allows of loading and firing from almost any position.

---

*On the different methods of delivering an Infantry fire.*

The question as to the relative merits of the different modes of delivering fire has, of late, owing to recent improvements in arms, acquired an importance it did not previously possess in anything like the same degree.

In the present day, when six to eight rounds can be fired per minute, we should have been tempted to an utter waste of ammunition, if there had not been discovered, in the form of a more rational mode of firing, a means of restraining the expenditure of cartridges almost at will. This “rational mode” consists of the substitution, in the majority of cases, of the volley for independent firing; and also in a more exact appreciation of the length of range at which firing is most telling in its effects.

The replacement of independent by volley-firing which has taken place in all armies, has not resulted in the absolute abandonment of the first-named mode of firing. There are occasions when economic considerations should be altogether laid aside, and when the last cartridge cannot be too rapidly used up. Still, with the arms we now possess, the question is to ascertain if, under the majority of situations connected with fighting, a relatively slow mode of firing accompanied by an imposing moral effect (*i. e.*, volley-firing) does not better answer the desired end than a more rapid discharge of independent firing which is capable of quickly ending in confusion and disorder.

A rapid examination of the advantages and the drawbacks of either of these two modes of firing, will show us what are the conditions necessary for their judicious application under given circumstances.

The advantages of independent firing are :—

1st.—That it permits the soldier to aim at leisure, and to pull the trigger at the moment when he considers he has covered his object.

2ndly.—That it gives a more rapid and lively fire than do volleys.

3rdly.—That it is better suited to the moral condition of the soldier, in that in the midst of danger it does not exact his sustained attention to the orders (as regards firing) of his superior officers.

On the other hand, its drawbacks are :—

1st.—That it can neither be regulated nor moderated, which tends to an excessive expenditure of ammunition.

2ndly.—That it produces, along the front of the line, so thick a smoke that the objects to be aimed at disappear completely : an inconvenience not experienced to the same extent in volley-firing.

3rdly.—That it offers to the leader the greatest difficulty in controlling the fire, which prevents all chance of carrying out a change from defence to attack on his part.

The advantages of volley-firing are :—

1st.—That it gives power to regulate the intensity of fire by the issue of orders to fire with greater or less rapidity.

2ndly.—That it allows the leader to control the effects of the fire, and to correct the range, provided he saw the effects of the first volley, and provided he can immediately remedy any error in calculating the distance.

3rdly.—That it can be corrected at will, thus permitting the rapid substitution of firing for a bayonet charge.

Its drawbacks are :—

1st.—That it compels the men to empty their rifles simultaneously.

2ndly.—That the greatest rapidity of fire cannot be attained.

3rdly.—That it does not harmonize with certain demoralizing positions in which troops may find themselves placed : as, for example, at the approach of a danger which may vividly impress a young soldier and render him inattentive to the orders of his officers.

From this comparative examination of the properties of volley and independent-firing, it is evident that the first named is the form which unites the greater number of advantages : it should therefore be preferred on the great majority of occasions.

Whatever may be the physical inferiority of the effect produced by volleys, as compared with independent-firing, this inferiority will be amply compensated by the authority preserved over the troops, during action, and by the certainty that the ammunition will not be wasted.

Independent-firing may be reserved :—1st, for occasions when the troops line an entrenchment, or are sheltered under protecting ground ;

2nd, for surprises; 3rd, for those exceptional occasions when surrounding influences may re-act in a painful manner on the *morale* of the troops, if young and experienced.

The advantages of both kinds of fire may be combined in adopting the *rapid yet limited* form of firing, which consists in discharging three rounds with the greatest speed. If, after the expenditure of these three rounds, the leader considers the desired effect has been produced on the enemy he will advance his men: if not, he will order the fire to re-commence.

We saw this form of firing tried, in 1868, at the camp of Chalons. The leader of the battalion stated in his word of command the number of rounds to be fired. It was feared, at first, that the men, flurried by the sound of the firing, would not strictly limit themselves to the given number of rounds, but would continue blindly to burn their cartridges. This fear was not realized, after each of these firings, in which generally three cartridges were expended, (which was done in from 20 to 25 seconds) the men of themselves ceased firing.

Besides battalion fire, company, and range firing which produce volleys more or less well sustained, almost all armies have recently adopted for columns, following the Prussian example firing in mass from four ranks.

This is a truly crushing fire, when delivered point blank by a body of men calm and attentive to orders. The combat of Podol (26th June, 1866) gives us a remarkable example of its value.

The Prussian General, De Bose, had resolved, spite of the lateness of the hour (10 P. M.), to carry the village of Podol—which was strongly occupied by the Austrians. The General had with him the two second battalions of the 31st and of the 71st Regiments. He made the battalion of the 71st incline to westward, in order to march upon the bridges, and he advanced the battalion of the 31st Regiment on the village along the high road. The column at the head of this last battalion, formed of No. 5 Company, checked the fire of the enemy posted among the first houses of the village, and came in contact with an advancing (Austrian) battalion. The column (Prussian) halted: the two foremost ranks knelt; so that the enemy might be received by a fire from four ranks. It was a bright moonlight. The Prussians waited till they could distinctly see the enemy, and at 30 paces they fired, immediately afterwards charging with the bayonet. The Austrian column retreated, leaving behind a large number of dead. Numerous trumpet and bugle calls were then heard, indicating a return of the Austrian column to attack: which, in fact, took place. The assault was met by No. 7 Company (Prussian) *in the same manner, and with the same success.*

Whatever may be the form of firing ordered, it is of the last importance that the commander shall not cease for an instant to have his men perfectly in hand: success entirely depends on this alone. The education of the soldier should, therefore, be directed to this end. The

commander should be able to derive, even in the midst of the combat, all the advantages that belong to the new rifle : and yet be able to pass rapidly from the midst of firing to a bayonet charge, when the opportune moment (always only too short in wars) shall arrive.

“True Translation.”

W. SIDDONS YOUNG, *Major,*  
*Commanding at Chunar.*





## NOTES.

## I.

**Insubordination, its causes and prevention.**

It is the duty of every citizen to obey the laws of his country, and a soldier having voluntarily taken upon himself (in addition to his duty as a citizen) a solemn obligation to uphold the law, and having received the pay of his country for his services, and being in all respects kindly and considerately dealt with—by a wilful opposition to, or a wanton breach of those laws, adds the moral crime of base ingratitude to his legal one.

The great mass of the army being law-abiding subjects previous to entering the service; men, who are perfectly aware that if a policeman bids them “move on,” they are bound to obey. They never saw the policeman before, and probably never will again; they are under no personal obligation to him, but they know that he—like a non-commissioned officer in the service—is armed with the authority of the law, and they obey. They are also aware that a mechanic—indeed, all who live by their labour—must obey the orders of those set over them by their employers, or suffer the present penalty of their misconduct, in addition to the misery which their subsequent want of employment entails—a result which the soldier is not sufficiently thankful to escape. In short, the lowest capacity is capable of understanding his duty towards the law and towards his social superiors.

This being the case, how is it then that there is so much insubordination and wilful disobedience in the army, accompanied in many cases with acts of violence?

I will briefly state my views:—First, it ought to be borne in mind what a very common (amongst soldiers) gesture or act, is sufficient to constitute an “offer of violence,” punishable as severely as the actual infliction of a blow!

And I would here enter my emphatic dissent from those who view the present large number of cases of insubordination as indicative of “wide-spread discontent,” to use the mildest of these alarmists’ terms, forgetting that in no case yet has anything like conspiracy or organization appeared. Soldier Fenians for the most part bore the character of good and obedient soldiers previous to their conviction; in fact, some of them were respectable non-commissioned officers.

It is not from isolated and individual cases of insubordination committed openly and without premeditation, that danger may be apprehended.

Insubordination is such a very serious breach of military discipline, that it is almost impossible to allow extenuating circumstances.

Consequently an *ex parte* statement—indeed the naked fact alone—that Private Jones struck Corporal Brown in the execution of his duty, for the most part only appears to the general reader.

In these and following remarks I hope I may not be understood to try and “tone down” insubordination. I have not the most remote idea of doing anything of the sort, neither would I have every unhappy soldier who in a rash moment commits insubordination, stigmatized as a mutineer.

When a man enters the service it is, almost invariably, from under the immediate control of his parents, or from labour under strangers.

A vitiated sense of freedom, a feeling of relief from the restraints, and almost inevitably a reaction, which if not kept in check by high and pure principles, results in moral recklessness, which the fear of punishment only prevents being developed into insubordination.

This class constitutes the great majority of recruits. There are undoubtedly many who embrace the profession for its own sake. These require no legislation.

Although it is much to be regretted, still it is scarcely a matter of surprise, that amongst so many, there should be some would-be scoundrels, professional law-breakers, who endeavour, both by precept and example, to corrupt all within their reach. They are safe to be as cowardly as they are worthless, and consequently, we are not astonished when we hear that they treacherously strike their officers in the discharge of their duty—in a word, commit any enormity. I would summarily inflict upon these wretches the (to them) severest and at the same time most fitting punishment of turning them out of the service, which they disgrace by their vile presence, to perform their punishment amongst—the only society they are fit for—felons.

On non-commissioned officers devolve the duty of carrying out the details of the discipline of the service. They ought therefore to be models of discipline and regularity, and should on all occasions remember that it is their strict duty to enforce good order and behaviour amongst those under them; they should remember that soldiers are not slow in discovering and appreciating the weakness of those over them, and some times taking advantage of it.

A diligent, upright non-commissioned officer will assuredly be respected by those under, as well as over him. Upon non-commissioned officers depend, to a great extent, the tone of the regiment to which they belong.

A certain number of non-commissioned officers are necessary for the due performance of the various duties of the service and are invariably drawn from the ranks; a technical knowledge of the special duties of each grade being the standard insisted upon, and even that, low as it is, sometimes produces deficiency of candidates for promotion.

It is obvious, therefore, that the more important qualifications of

tact, temper, &c., must be overlooked; consequently, many men are placed in authority who, from want of education, soon degenerate into the bully, who know no other way of enforcing their orders than—"Say you won't do it." I believe that many of them are entirely unaware how very irritating their conduct is, and what serious consequences may be thereby provoked. They may say it is no business of theirs, the soldier must obey; true, he must, and so he will, or suffer, but he is sometimes called upon to do disagreeable things, which, if insisted upon in a disagreeable manner, is rather trying, and the natural irritation arising, therefore, may very readily be construed into insubordination, than which nothing was further from his thoughts.

Then again there are the lazy, indolent, non-commissioned officers, who do just so much as will save them from reproof, while under the immediate superintendence of their superiors, and at other times let things "go by the run."

This class of non-commissioned officer does more by "their slackness" indirectly to promote crime, than, perhaps, the most reckless and insubordinate soldier. Their successor will probably see things in a different light, and unless he be a man of judgment and discretion, his well-meant efforts to reform the abuses of his predecessor will almost inevitably result in more or less decided cases of insubordination.

I regret to add, that in my experience it is the so-called "intelligent men" who make up in a great measure this objectionable class of non-commissioned officer; they are generally above their work, and consequently neglect it.

Another class of non-commissioned officer who contributes largely to swell the list of insubordination, is those who blow hot and cold; in other words, do their duty at one time with an excess of zeal, almost as objectionable as the weakness and neglect which follows; allow freedom at one moment, which they resent at the next. These non-commissioned officers are excessively dangerous to discipline and to their comrades.

There are others who by their incautious, injudicious behaviour indirectly promote insubordination by unnecessarily exposing themselves to be struck, threatened, &c., by men already in confinement for drunkenness. Indeed, it is a fact worthy of remark, that a large proportion of "offers of violence" and "threatening language" occur *after* arrest for sometimes trivial offences.

I have thus briefly touched upon the errors of conduct, habit, &c., in non-commissioned officers and men, which tend to crime. I have purposely omitted drunkenness, as the law very properly does not allow it as an excuse, inasmuch as it is a man's own deliberate act which causes it.

I will now say a few words on the *prevention* of crime, anything which even in the smallest degree tends legitimately to that end being worthy of consideration.

Schools should be established for the thorough training of non-commissioned officers in all their duties. There are schools kept at the expense of the state for turning out school-masters, band-masters, &c., but *none* for educating that more important section of the army, the non-commissioned officer. Any non-commissioned officer who, while in course of training at these schools, showed superior aptitude and talent, should be passed to a higher school, with a view to being trained for the position of a commissioned officer. I consider this extremely important.

A board of officers—regimental for corporals, garrison for those over that rank—should be invested with power to reduce to a lower rank or to private, or to disrate any non-commissioned officer proved guilty of incompetency, continued neglect of duty, &c., subject to confirmation as in the case of court-martial.

The confirming officer to have the power of ordering the offender to be dealt with by a court-martial, or by this board, the sentence or award of which carry with it no further consequences than are shown by it, that is, not to involve entry in any defaulter book, &c., except, of course, the record of service.

There ought to be some secondary punishment in the case of the higher ranks of non-commissioned officers, for want of which the punishment is often disproportionate to the offence, and tends to disgust many well-meaning non-commissioned officers, who in a weak moment may commit themselves, and not having sufficient strength of mind to “try again,” and recover lost ground after such a crushing defeat as reduction, many a good non-commissioned officer is lost to the service, and, probably, an equal number of indifferent and bad soldiers gained thereby.

Unless for serious offences, I would not degrade a soldier by sending him to the “prisoners’ room.” I believe that more than half the cases of insubordination, to say nothing of less serious crimes, are hatched in this place; it is usually tenanted by one or more of the professors in villainy, I have before noticed, awaiting trial or sentence, who take a fiendish pleasure in corrupting the young but yet untainted soldier, who for some trifling breach of discipline finds himself a tenant of this place. Twenty-four hours in a prisoners’ room is in itself a serious punishment to any man not thoroughly hardened.

The escort necessary to convey a soldier to the prisoners’ room ought to be taken from another room, and not warned (except in very urgent cases) in his presence.

As another incentive to good conduct, I would pay the men as follows: All non-commissioned officers and men with two or more badges, weekly. Men with one badge, bi-weekly. Men without a badge, daily. I have always been adverse to indiscriminate weekly payments. An indulgence ceases to be considered such when participated in by all; besides, it inflicts a positive injury on the weak-minded soldier.

I would strongly recommend that all non-commissioned officers should be in possession of a handy book detailing briefly and simply their duties

as far as possible, with plain directions for their general guidance when on detached duties, such as escorts, guards, &c., and hints as to their intercourse with those under them, as well as with their superiors; this might be compiled under the supervision of the commanding officer from the Queen's Regulations, Standing Orders, &c., and would, I believe, supply a want much felt by non-commissioned officers generally, particularly the younger ones.

Speedy trial and prompt punishment for the most serious crimes is extremely desirable, prisoners some times being in the prisoners' room for many weeks awaiting their sentence.

A permanent court-martial, somewhat similar to civil courts, advised by a Crown lawyer, should sit in every garrison, before which commanding officers could send for trial, after their own preliminary examination, offenders guilty of serious crimes. The court to have power to deal summarily with cases brought before them, and to furnish periodical reports to the General or other officer commanding.

GEORGE ACRES,

*Sergeant Major, 1st Battalion, 17th Regt.*

LUCKNOW,  
7th July, 1871.



## II.

## Camps of Instruction.

Now that, for the first time in her history, England is preparing to instruct her army in the art of war by assembling large bodies of troops in camps of exercise, under conditions as nearly resembling those of active service as can be obtained in time of peace, it may be well to consider what sort of work the troops should be put to, in order to give a maximum of warlike instruction to officers and men.

The Press in England appear to take it for granted that the time will be best employed in carrying out a series of manœuvres, on the so-called Prussian system, where two forces contend against each other strategically, and in mimic battles, the issue being decided by umpires.

In following the German lead it must not, however, be lost sight of that, as certain political institutions are adapted to particular races, so it is with military institutions and modes of fighting.

The Duke of Persigny, in a critique on the late war, says :—" In truth the French army never has had, and never will have, those qualities which since the days of Frederick the Great have distinguished the Prussian army. Never will the French character adapt itself to that minute attention to detail, to that unwavering discipline, to that zeal for instruction and perfect organization which characterize the Germans. Nevertheless, notwithstanding her acknowledged faults, France has been, and always will be, a first class military power, as her sons possess warlike qualities of a different nature." The writer goes on to say that France will owe her future successes to the development of these special qualities, and not to copying the Germans.

Although our national character is a nearer approach to that of the Germans, still, before adopting the Prussian system of military training and of fighting, we should carefully consider whether they are suited to us, and accord with our traditions.

Playing at war is a novelty to the British soldier, and although no one can contest that the manœuvring of troops in two bodies representing hostile forces, must prove most excellent practice, and furnish lessons to all ranks likely to be of use in real war, still it may be asked whether operations conducted on the Prussian system, with high flights of strategy, umpires, &c., *in which moral influences have no place*, would at all resemble any military operation, the British army is likely to be called on to undertake in the East, our most probable battle-field.

May not the instruction of the General, and Staff, be bought at too high a price, if, at the same time, the character and traditional mode of fighting of the soldier are changed. It used to be our boast that the British soldier did not know when he was beaten, and to this ignorance we owed many victories ; but how will it be if we accustom him to

retreat or consider himself captured, as a matter of course, because a superior force has been brought against his corps?

In manœuvres mimicking war, numbers are the only tests of superiority; is it not doubtful policy to train the soldier to consider himself beaten, because out-numbered. Shakespeare's Harry V thought so when he prayed:—

O, God of battles, steel my soldiers' hearts,  
Possess them not with fear—*Take from them now*  
*The spirit of reckoning*, if the opposing numbers  
Pluck their hearts from them.

Besides this spirit of reckoning, a spirit of criticism, an over-reliance on strategy and manœuvres, and tendency to refer every disaster to bad handling, are liable to produce serious demoralization in the event of an army meeting with reverses. Englishmen, as it is, are nearly as prone to refer every thing that goes wrong to the *blundering* of the authorities, as the French are to their treachery.

Without under-valuing the importance of generalship, it must be remembered that battles now, as ever, are a matter of hard pummelling, where the qualities of courage, physique, and endurance have much to say to the issue of the day.

It is undesirable in the extreme that men should look upon themselves as merely powers to be moved on the chess-board, at the will of their leader.

To ensure moderation in success, and fortitude under reverses, soldiers must be penetrated with the idea that the character of the individual soldier, his courage and state of physical training, have as much to do with the result of a campaign, as the generalship of the leader; and that dogged courage will repair the errors of bad handling.

The skill of their Generals and their splendid organization would not have enabled the Germans to achieve such unexampled successes in the late war, had it not been the support they received from the knowledge of their duties in all positions of the battalion officers, and the vigilance, trustworthiness and sobriety of the rank and file when away from the control of their superiors.

Before proceeding to work out strategical problems, officers should be taught how to conduct the minor operations of war; and the soldiers trained to act independently; as the best combinations will be of no avail, if there is a lack of vigilance, intelligence, and sobriety on the part of those whose duty it is, while screening their friends to watch their enemy.

As regards strategy, the main lesson to be taught is the importance of *time*. All strategical combinations are calculations, in which time is the main element. Movements of concentration and dispersion, where natural obstacles have to be overcome, and the time of arrival has been fixed beforehand, cannot be too frequently practised. The departments of Transport



and Supply will be thoroughly tested; and on service the commander and his staff relieved of much trouble and anxiety if a thorough reliance can be placed on the punctual arrival of fractions of the army at ordered points. As regards tactics, troops should be practised in the harmonious working of the three arms to gain some well-defined object; in rallying after having seized a position in loose order; in capturing villages, crossing streams, covering retreats—in fact, in all the different operations of the battle-field, before it is attempted to exercise them in mimic battles. This applies especially where volunteers form a portion of the force. Time and thought will only be wasted in attempts to produce a theatrical appearance of real fighting, unless all hands have been taught the elementary principles of tactics. Time is an important element in tactics, but what is of vital importance is *ground*. The constant study of ground, from a military point of view, cannot be too strongly impressed on all officers. In an attack they should be taught to *make use* of natural obstacles and inequalities of ground, and not to consider them as merely obstacles to be overcome; and never to use a greater force than is necessary to effect their object.

The importance of the physical training of soldiers cannot be over-rated, and it is to be hoped that a wholesome rivalry between corps, in this direction, will be not the least of the advantages of the camps of instruction.

A thousand men, who, after fighting and manœuvring all day, could be brought to the charge in the evening, would be worth more than two thousand, who through exhaustion would require to be relieved at mid-day, as they only want half the number of rations.

There is no reason whatever why the British army should not become as skilful in playing the game of war in peace time as the Germans are; but it must be remembered that it is a new thing to us, that our brightest victories were won when nothing of the sort was attempted, that our officers, as a rule, have not studied war as a science, and have contented themselves with leading on their men when ordered, without troubling themselves with the why or the wherefore, and we must beware of attempting to run before we have learnt to walk.

In an army, what is chiefly required is a substantial organization, moved by simple machinery and “capable of working regularly in time of war, because it has been habituated to working regularly in time of peace.”

The main object of camps of instruction is to test periodically this organization.

With our organization thoroughly tested, our army kept in training by toils undergone cheerfully, and the intelligence of the men developed by constant practice in out-post and patrol duties, even if further instruction be confined to the A. B. C. of strategy and tactics; although we may not possess a body of trained umpires, and our troops may

occasionally persist in holding their own, when beaten out of the field according to all the rules of scientific warfare ; still we shall have, what we want, an army ready to go anywhere and do anything.

H. WAVELL, *Major,*  
*41st, The Welsh Regiment.*



FIG 1

FIELD WRITING CASE.

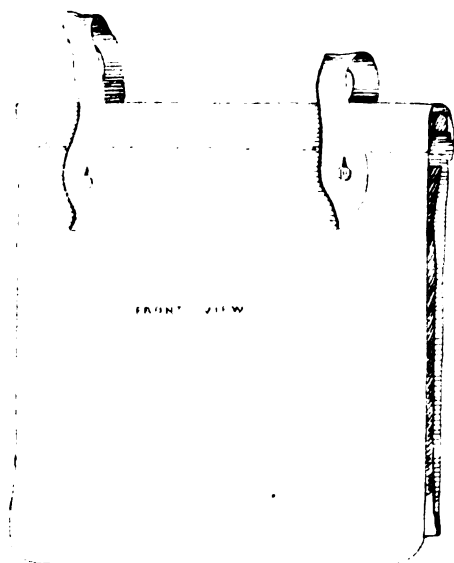


FIG 2.

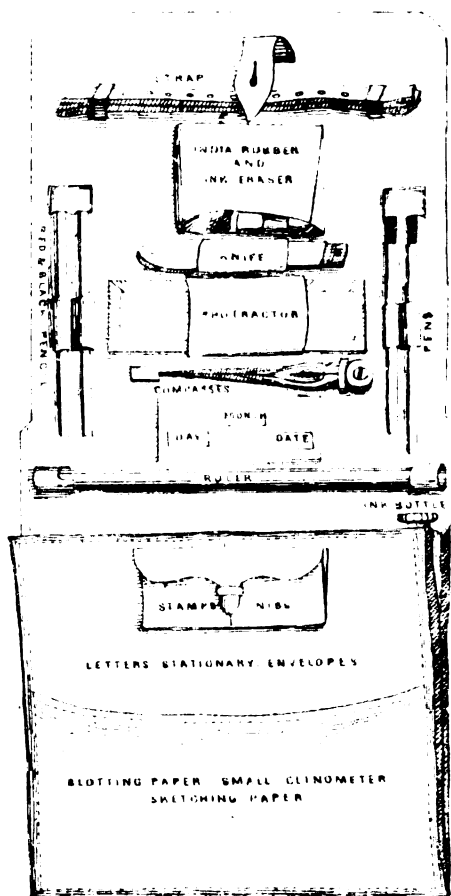
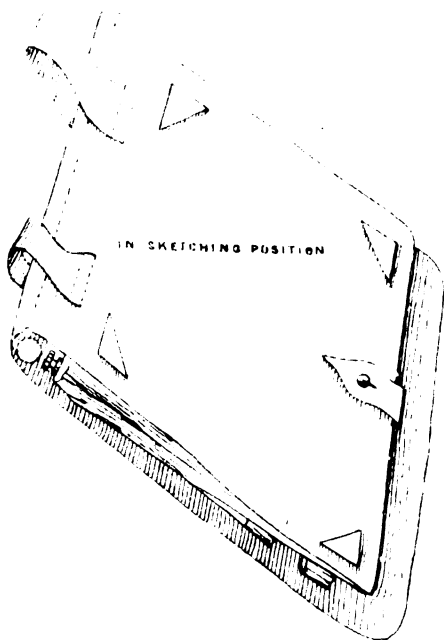


FIG 3.



## INVENTIONS.

### I.

#### A Field Writing Case.

WHEN travelling as an Adjutant, the writer had so frequently felt the want of something to carry papers in, and to afford the means to the Commanding Officer of signing on the spot the documents brought to him for that purpose, that he at last had a sort of sabretache made which combine field office with a sketching block, containing everything necessary arranged in such a manner that nothing can fall out. This article has been so much in request lately as a pattern, especially among officers at his station whose regiments are under orders for the Delhi Camp, that he is now induced to send a description, as well as a few rough sketches of it, in the hope that others at a distance may find it useful also.

#### *Description.*

Front, 11 by  $9\frac{1}{2}$  inches, stiff leather, to the inside of which are sewn all the loops and pockets which hold the various useful things, so disposed that each article prevents its neighbour from slipping out when riding.

The other half or back is also of stiff leather, and has two pockets of softer leather sewn to it; the larger one to contain foolscap paper folded in half, envelopes, a few printed forms of dockets, telegrams, letters just received, &c., &c., and a smaller exterior pocket for blotting and ruled sketching paper and a simple card clinometer.

In the corner of the larger or stationary pocket is fixed an ink bottle, with a brass top screwing firmly on a leather washer, to prevent the ink from escaping; (very similar to the oil bottles in the soldiers' white ball bags) and outside of the same pocket, is a very small one in two compartments, to hold postage stamps in the one and steel nibs in the other.

The articles contained in the other half consist of:—

|             |                                                       |
|-------------|-------------------------------------------------------|
| Figure 2.   | Ink Eraser and India Rubber.                          |
| Upper half. | Pencils : 2—1 red, 1 black.                           |
|             | Penholders 2                                          |
|             | Pen-knife 1                                           |
|             | Protractor 1                                          |
|             | Compass 1                                             |
|             | Ruler, forming a hinge for the two halves to bend on. |
|             | Pocket containing dates, day of week, and month.      |

The strap which appears folded and held by three loops, is 44 inches long, and is used to hold the case in a convenient position for sketching, by slipping it through the two saddle straps, and putting it round the neck ; or for use by an orderly when carrying it.

Figure 2.  
Upper half.

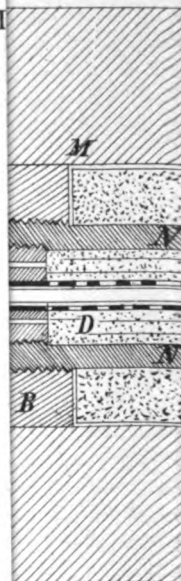
For a mounted officer it should be suspended from the saddle on the off-side, where the right hand can immediately open it and obtain any document or instrument required, instead of the very inconvenient position occupied by the ordinary cavalry sabretach. Officers commanding companies of infantry, when marching or on service, if in possession of one, would never be at a loss for pen, ink and blotting paper for signing their indents, states, crimes, &c., and the wherewithal to make a decent sketch, if on advanced guard or out-post duty, and it can be very easily carried by him, either by passing his sword belt through the two saddle straps, or by using the folded strap above mentioned. The usual four triangular pieces of leather for slipping corners of the sketching paper under, are fixed to the exterior of the back half of the case : consequently, when in the sketching position the knife, pencils, protractor, compasses, or any other thing that is required, can be immediately got at without moving the case from its position, by simply raising the upper half and inserting the hand.

The case when packed with every thing in its place, with a supply of paper, envelopes, &c., weighs  $1\frac{1}{2}$  lb. The one in the writer's possession (in designing which he was assisted by a brother officer, Ensign J. Reid) was made up by Conductor Roberts of the Government Tannery at Cawnpore; by permission of Captain Stewart, R. A., who allowed it to appear among other things sent to the Lucknow exhibition, from his department, and where it obtained a very good prize for the maker.

H. HUTCHISON, *Lieutenant,*  
*Adjutant, 1-14th Regiment.*



A. D. 1870, MAY 20, No.  
TAYLOR'S SPECIFICATI



*The field drawing is not colored*

e Survr. Genl's. C





## II.

**Improvements in Rocket Projectiles for purposes of war.**

This invention has for its object the ensuring of an even, direct, and undeviating course in a rocket during its flight, and consists in imparting to the head of a rocket an initial velocity, the flight being afterwards sustained and prolonged by the re-active fire of the rocket.

The projective force is applied approximately to the centre of gravity of the mass, and not, as is usual, placed behind it.

*Description of the Drawings.*

Fig. 1 is a longitudinal section of the war rocket and gun, as they would appear previous to the discharge of the gun, and Fig. 2 is an elevation of the rocket during its flight. Similar letters of reference are employed at each of the foregoing figures to denote corresponding parts.

To the rocket proper or tube for containing the composition, A, is affixed by suitable means a head, B, containing a bursting charge, C, and being larger in diameter than the rocket, a smaller tube, D, is centrally disposed for the entire length of the head and rocket, firmly fixed to the head at E and vent piece, F, where it passes through the composition, being studded with holes for the purpose of supplying air to the composition—thus superseding the ordinary method of ramming rockets, the composition in this case being rammed solid round the tube.

This inner tube is lined or covered externally with stout paper, or other suitable substance, to prevent the fire running up it and bursting the rocket. When the rocket is at rest, this tube is occupied by a rod, G, of a somewhat less diameter than the interior diameter of the tube D; one extremity of this rod G forms the apex of the rocket head, and is enlarged for a short distance of its length at H, so as nearly to fit the tube; the other extremity projects slightly beyond the tube, and is fitted with a screw, K, of two or more blades, for the purpose of assisting in causing the rocket to rotate during its flight at the end of the tube D, and close to the vents of the rocket a friction fuze, L, is fitted accurately round the rod, being in connection with the priming. On the rocket being projected from a suitable gun, the air impinging upon the end of the rod H, which is hollowed, forces the rod down the entire length of the inner tube, the enlarged end H of the rod G. tearing the fuze L, and thus igniting the composition and then firmly jamming itself in the vent piece F.

The tube being thus open to the atmosphere at the head, and blocked at the vent piece, an abundance of air is, of necessity, supplied to the burning composition. The annular cartridge, M, by which the rocket is projected, is disposed round the tube (which is at N adequately

strengthened for the purpose) immediately under the head, being of the same diameter and kept in place by the wad or washer O, secured by a collar, P,\* formed on the rocket tube.

The rocket is fired from a gun, Q, rifled or smooth, the internal diameter or bore of which is equal to the diameter of the rocket head, a hole being formed through the breech, R, of the gun for the reception of the rocket proper. On the rocket composition being spent it explodes the bursting charge contained in the head; in the usual manner a percussion fuze may be placed in the head of the rocket for the purpose of exploding the bursting charge immediately on the rocket coming into contact with any opposing substance.

---

*Remarks.*

This rocket can be fired from any smooth bore gun, whose bore terminates rectangularly, and its diameter the size of the head of the rocket, if the gun be fitted with a piece of its breech to unscrew the size to be slightly larger than the shaft of the rocket to enable the thread of the screw to be filled with a "bush."

This ready conversion of a field piece into a rocket gun, enables the artillery of an army in possession of them, to play rockets as occasion offers, into combustible matter, distant and advancing bodies of of cavalry or horse artillery, with much greater accuracy than has hitherto been attained.

As the rod of the rocket is telescopic, the rocket can be carried in the ordinary limber boxes of field guns.

Since April 1866, the use of the ordinary service war rocket as shells have been discontinued, owing to these projectiles having less range and accuracy than common shell; but as my shell rocket has the same accuracy as common shell, for short ranges, and its flight will be of so much greater extent than the ordinary war rocket, travelling alone with its own propelling, power-outweighs the causes that led to the disuse of the shell. Hence I have made mine a shell rocket.

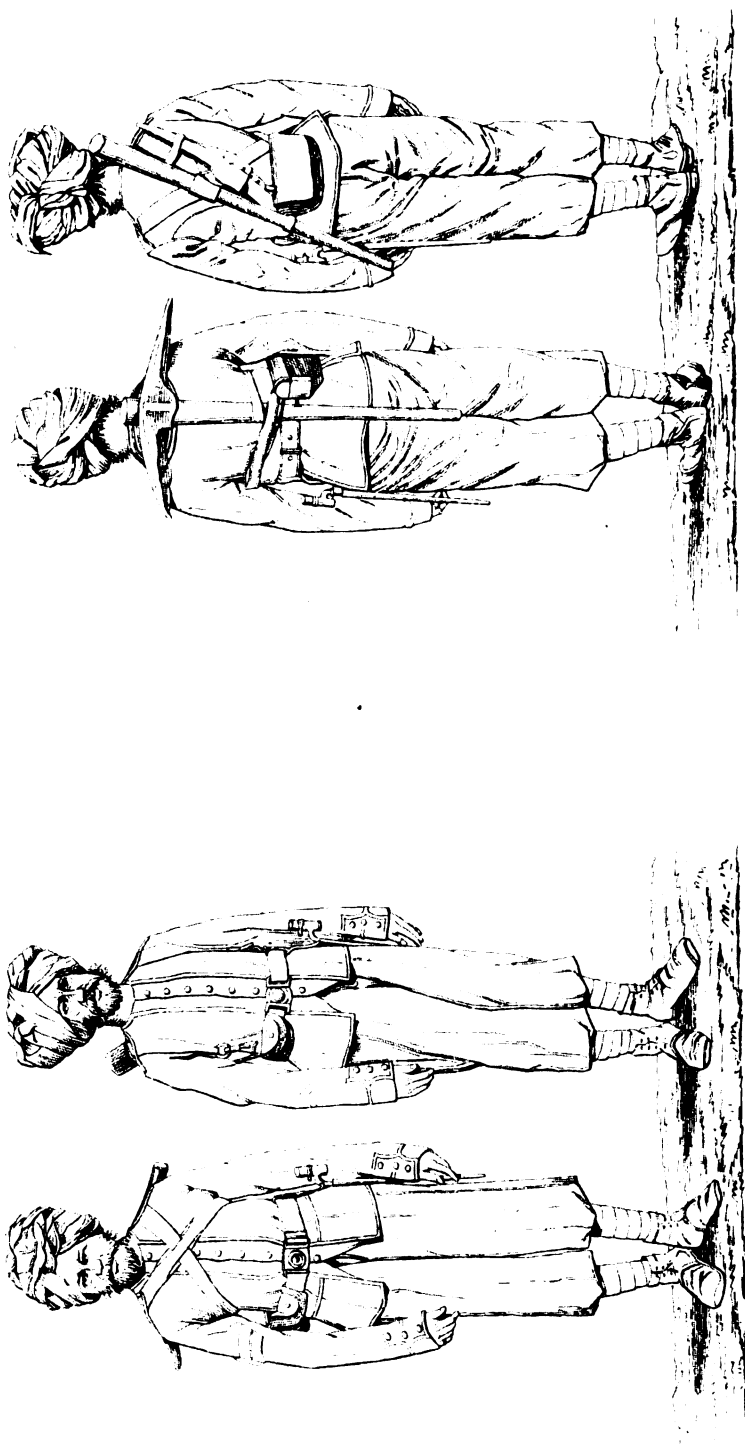
In conclusion, I beg to intimate that I have under construction a two (2) pounder experimental bronze gun (M. L.) and projectiles, on a principle for which I have also taken out letters patent. The correctness of this principle I have already tested by experiments, on a small scale, in England.

ADDINGTON TAYLOR, *Major,*  
8th Regiment, Native Infantry.

---

\* The collar P from subsequent experiments, I have found to hinder the instant movement of the rocket, on the ignition of the cartridge, thereby increasing recoil; hence I have removed it—A. T.





Litho. at the Surv. Gen'l's Office, Cal. December 1871

## III.

**New pattern belts for pickaxes and other tools carried by the men of our Pioneer Corps.**

At present the pickaxes, in leather cases, are carried on the men's backs, with the helves through the heads, suspended by 2 straps which cross on the chest (*vide* figs. 1 and 2.)

This mode of carrying the tool produces exhaustion, from the whole weight of it bearing on the chest, pain from the buttons of the coat being pressed into it, and inconvenience, as the bearer is unable to sit down during the time he is wearing the pick. The pouch, moreover, is displaced, for, instead of being in the centre of the back, it has to be slipped round out of the way of the helve and into the way of the man's arm.

To remedy these defects, I suggest the following alterations:—

1. The belts to be worn as braces, fastened to the waist-belt behind by 2 studs; to cross each other just below the shoulder blades, and be there stitched together, then pass over the shoulders to the front, and end in brass rings about an inch below the breasts: these rings to be connected to 2 D's on the waist-belt in front by straps and buckles, and on them to be sewn straps, an inch in width, which pass low under the armpits and be buttoned to the 2 studs abovementioned (*vide* figs. 3 and 4.)

2. The pick and helve to be carried separately, the former on the belt crossing right shoulder, broad end downwards, fitting into a leather shoe, 8 inches long, and sewn with copper wire; a leather case, covering the point and head of pick is attached to the same straps by a sliding loop, which allows the removal and replacement of the tool, without necessitating the taking off of the belts.

3. The helve to be carried above and parallel to the pick, thin end downwards sliding into 2 loops, one on the strap crossing left shoulder close above the stitching together of the belts, the second on belt crossing right shoulder and just below broad end of the pick.

4. A pad to be sewn under the belts where they are stitched together, to prevent the back of the wearer being bruised by head of the pick.

I took long walks in the hills, in May last, wearing these belts, and I myself, as also sepoy who tried them, have been thoroughly and practically convinced of their superiority over those at present in use. They can be removed from the body and put on with the waist-belt, and a man can accoutre himself in about one-third of the time it now takes him.

The other tools, except the saws, can be carried on exactly the same principles. The saws are in my opinion too large, smaller ones should be carried, and the larger ones brought up with the reserve tools.

I am indebted to Captain Jackson, 32nd Punjab Pioneers, for the accompanying photographs.

T. N. WALKER, *Captain,*  
32nd Punjab Pioneers.

DHUNPO RANEEKHET ROAD,  
28th August, 1871.



## CORRESPONDENCE.

To

THE SECRETARY OF THE UNITED SERVICE  
INSTITUTION OF INDIA.

SIR,—I would wish, through the columns of this Journal, to express my sincere hope that the proposition of Major Paget, relative to the establishment of a veterinary school in India, should, if possible, be carried out.

It is a proposition that must commend itself much to the attention of all cavalry officers, and if all officers commanding regiments were to express publicly their concurrence in, and approval of, Major Paget's proposition, it is, I think, possible the Government might be inclined to look favourably upon the scheme, and take action in the matter.

All officers must acknowledge the advisability of it, and the only wonder is that we get on as well as we do, and lose so few horses as is generally the case.

The knowledge possessed by all our 'salootrees' must be, and is, purely superficial, and there are but few regiments, I fancy, which have more than one man who can be trusted to perform an operation, or who could detect the difference between a case of colic and inflammation of the bowels.

Some may say, if you have this one man, why not get him to impart his knowledge to others? but it is well known that there is a strong feeling of jealousy amongst natives, and that the man who, perhaps, *can* teach, does not always care to do so; whilst, again, those who *might* learn, are not always prepared to accept knowledge in this way.

Some regiments are fortunate enough to have British officers who take great interest in the horse hospital, but in these cases the 'salootree' learns to be very dependant on the officer, and when he is absent from his regiment, the native is much at a loss, and has but little faith in his own knowledge.

This is as matters stand now, but if we had a few men per regiment regularly taught and trained, their confidence would be much greater, and their value to their regiment be consequently much increased.

Why should not classes be formed at some central station for the instruction of natives in the veterinary art, or at the head-quarters, say, of each division?

Government would have to be solicited to grant a certain staff allowance to veterinary surgeons taking charge of these classes, but as all veterinary surgeons might not care to give their time and trouble, even

if paid for it, I would suggest that veterinary surgeons be called upon to state their willingness or otherwise to undertake the task of instructing natives.

I offer these suggestions with much diffidence, feeling that there must be many more qualified than myself to draw out a plan for the proposed measure, and feeling too that there may be many objections to what I have ventured to suggest ; but I think it is a question of so much importance to the native cavalry, that we should, all at all events, express our approval of Major Paget's proposition, and hope that it may attract the favourable notice of Government.

I have the honor to be,

SIR,

Your obedient servant,

H. MELVILLE, *Major,*

*Commanding 19th Bengal Lancers.*



## NOTICES.

- 1.—It is earnestly requested that Members of the Institution, who have not already paid their donation and subscription for 1872, will do so at their earliest convenience. Officers, who may wish to become Members, are requested to be kind enough to forward their donations and subscriptions at the same time as they express a wish to join the Institution.
- 2.—Members changing their residence are requested to give early intimation of the same to the Secretary at Simla, and also to the Corresponding Members (if any) of the Station they are leaving and going to.
- 3.—Members going to England are requested to give an address in India where their Journal may be sent, and to note that their subscription is due on the 1st May in each year.
- 4.—Members are invited to become Corresponding Members at the different Stations. The duties of this office will be to collect subscriptions, forward papers, arrange about lectures and debates, and to communicate on general matters with the Council.
- 5.—The attention of those who intend to contribute to the Journal is called to the Rules on this subject.
- 6.—Members, who may be willing to give their services for the translation of papers on Military subjects from foreign languages, are requested to communicate with the Secretary naming the language which they offer to translate.
- 7.—The attention of those who are working out inventions of Military importance is called to the opportunity afforded by the Journal of the Institution of making their ideas known. All inventions forwarded for publication will be carefully illustrated and described.

The following is published for general information:—

---

## Revised Regulations of the United Service Institution of India.

- I.—The Institution shall be named “The United Service Institution of India.”
- II.—The design of the Institution shall be the promotion of Naval and Military Art, Science and Literature.
- III.—The proceedings of the Institution will embrace—
  1. The delivery of lectures at any station in India.
  2. Debates on Military subjects at any station in India.
  3. The publication of a journal, as often as practicable, containing (when procurable) matters arranged in the following order:—
    - (a) Original papers on Military subjects which the author is unable or unwilling to deliver in the form of a lecture.
    - (b) Reports of lectures with the discussions thereon.
    - (c) Reports of debates with the discussions thereon.
    - (d) Opinions of Members on matters published in former numbers.
    - (e) Selections from the records of the Military Departments of India (by authority).

- (f) Translations from foreign works of Military interest selected by the Council or sent by Members.
- (g) Short notes on professional subjects.
- (h) Notices of inventions of Military importance.
- (i) Correspondence on professional subjects.

IV.—Composition—

1. The following shall be solicited to be Patron and Vice-Patrons respectively ex-officio:—

PATRON:

His Excellency the Viceroy and Governor General of India.

VICE-PATRONS:

His Excellency the Commander-in-Chief in India.  
“ “ of Madras.  
“ “ of Bombay.  
“ “ of Royal Navy on the Indian Station.

2. Besides the above, Vice-Patrons shall be limited to members of the Royal Family, Officers distinguished for their services, and Members who have been benefactors to the Institution.
3. All Officers of the Royal Navy and Army and of Volunteer Corps in India shall be entitled to become Members on payment of the entrance fee and annual subscription.
4. Gentleman, not included above, may become Members on the recommendation of two Members of the Institution, and with the approval of the Council.
- V.—1. The Government of the Institution shall be vested in a Council at the Head-Quarters of the Army in India, to consist of not less than 12 Members or more than 24, to be, as generally as possible, representative of all branches of the Forces in India. The names of Officers, willing to serve on the Council for each ensuing year shall be published at least one month before the election, and all Members of the Institution, unable to attend, may record their votes for the Council by proxy.
2. One half of the Members of the Council shall go out annually by rotation, but all shall be eligible for re-election. Vacancies, occurring otherwise than by rotation, to be filled up provisionally by the Council.
3. Four Members of the Council will form a quorum, and the Senior Member will preside.
4. Officers will be invited to become Corresponding Members, to forward the objects of the Institution, and to communicate with the Council.
5. A Secretary shall be elected by the Council at the Head-Quarters of the Army in India for the purpose of (under the orders of the Council) keeping the accounts editing the journal, and conducting correspondence, &c.
6. The duties of the Council shall be to exercise a general control over the welfare and expenditure of the Institution, and to pass papers for publication.
7. The Council shall frame such bye-laws, for the general conduct of the Institution, as may appear to them necessary, subject to confirmation by Members of the Institution at the next General Meeting.
8. The accounts of the Institution shall be circulated annually for general information.
9. Non-Commissioned Officers and Soldiers of the Army and Volunteer Corps shall, when practicable, be permitted to attend meetings or to hear lectures, &c., and the introduction of a Member shall be sufficient to admit non-subscribers for the same purpose.

10. Secretaries of Sergeant's Messes and of Regimental Libraries and Reading Rooms can obtain the Journal of the Institution by paying in advance the amount of the annual subscription for each copy required.

VI.—An entrance fee of Rupees 5 shall be paid by Members on joining and an annual subscription of Rupees 5 shall be paid in advance by the 1st of May each year.

By order of the Council,

JOHN BALLIE, LIEUT.-COL.,

*Acting Honorary Secretary.*

---

## BYE-LAWS.

---

### Rules for Contributors to the Journal of the United Service Institution of India.

1. All papers must be written in a clear, legible hand, and only one side of the paper.\* All plans must have a scale on them.
2. Contributors may write anonymously, if they prefer to do so.
3. Unless the author expressly states at the end of his paper that he wishes it published complete or not at all, the Council will make such alterations in it as they deem necessary.
4. The Council do not undertake to authorise the publication of such papers as are passed, in the order which they may have been received.
5. Papers will be published, if passed, by any four of the Council.
6. Contributors will be supplied with a few copies of their papers, provided they apply for the same before it is in the Press.
7. Contributors are requested, in future, to append a 'non de plume' to their papers, in order that they may be communicated with in the "Answer to Contributors."

---

### Rules for the Regulation of Meetings and Debates of the United Service Institution of India.

1. The subject of all lectures and debates must be submitted for the sanction of at least four Members of the Council before they are held.
2. The Senior Members present, being an Officer of the Navy or Army, shall always officiate as Chairman at Meetings.
3. Speakers are requested to address their remarks to the Chairman, and not to the Meeting.
4. In the event of more than one Member rising to speak at the same time, the Chairman's decision as to who shall be heard first shall be final.
5. If called upon to do so by the Chairman, a speaker shall at once sit down.
6. No remarks of a personal nature, or in any way subversive of discipline or harmony, will be permitted.
7. Speakers are requested to arrange for notes of their own speeches being taken.
8. No interruptions will be permitted during the reading of a paper, or the speech of another Member.

---

\* Special attention is directed to this rule, communications on both sides of the paper cannot be printed.

9. Meetings shall be broken up or adjourned only on the general vote of the Members present.

10. Non-Commissioned Officers and Soldiers of the Army, and Volunteer Corps shall, whenever practicable, be permitted to attend meetings, to hear a lecture, and the introduction of a Member shall be sufficient to admit non-subscribers for the same purpose.

By order of the Council,

JOHN BAILLIE, *Lieut.-Col.*,

*Acting Honorary Secretary.*

---

## LIST OF SUBJECTS ON WHICH PAPERS ARE DESIRED.

On the organisation of Transport Department for the Army in India.

On the organization of an Intelligence Department for the Army in India.

On Military Telegraphy and Signalling adapted for service in India.

On the organisation of the Native Army of India.

On the organisation of the Staff Departments, Civil and Military, for War.

On the uses to which Troops, British and Native, can be put to, in aid of Government works.

On the organisation of Pioneer Companies in Infantry Regiments, and the more careful instruction of this branch in the field works, &c.

On the future of Cavalry, as drawn from the teaching of the last three great wars.

On the distribution of the Army in India strategically considered.

On the defence of our N.-W. Frontier.

On the defence of our N.-E. Frontier.

On the Sanitary Condition of the Army in India, British and Indian.

On the defence of the Ports and Coasts of India.

Is the system of Military justice of our Army (British and Native) capable of improvement?

Cannot the system of pay of the Army, (British and Native) in India, be simplified and improved?

Can Army correspondence be reduced with advantage?

On the practical education of Officers generally, especially of Staff Officers.

Notes on lessons taught by warfare in India, or against undisciplined enemies.

Reviews of Indian Campaigns with the lessons deducible therefrom.

On the conduct of operations among Mountains.

On the arming of the Native Army.

On the danger to, and aid derivable from, India, in the event of a war with France, Russia, Prussia, or America.

Records of the History of Native Regiments, and of the services of British Regiments in India.

Memoris of distinguished Native Soldiers.

Memoirs of distinguished Officers who have served in India.

On the possibility and advantage of including a large number of our time-expired British Soldiers to settle in India.

On the advantages to be derived from a system of appointing our Soldiers, European and Native, to the numerous posts under Government from which they are now debarred.

On the aid which might be derived in the event of rebellion in India from the organisation of all British and Eurasian subjects as fighting men.

On the Military training of our Native Regiments.

On the organisation of Native Regiments officered entirely by Natives.

Plans of operations of Campaigns, in which the Army of India might be engaged, whether within or beyond our frontier.

On the amalgamation of the various Staff Departments of the Army and their subordination to one Chief of the Staff.

The improvement of the Pension Rules of the Native Army, the discharge of Native Soldiers after a fixed period of service, and the abolition of Annual Invaliding Committees.

On the results which will probably follow from moving Troops, British and Native, in course of relief by rail instead of by route march.

On the advantages of fortified posts as shewn during the Mutiny.

Punka-pulling by machinery adapted to Barracks and Hospitals of European Troops.

On Regimental Workshops, Gardens, and Soldiers' Industrial Exhibition, and the disadvantages of the existing system of Annual Prizes.

On the formation of new cantonments, and the conditions under which Civilians should be permitted to purchase house property therein.

On the carriage of Regimental reserve of Breech-loading Ammunition in Mountain Warfare.

On Military Law as a branch of an Officer's Education.

On the uses of torpedoes in River and Coast defence in India.

On the advantages of practice against moving targets for Artillery and Infantry.

On the advisability of amalgamating the departments of Adjutant General and Judge Advocate General, in view to the administration of pure discipline and Military Law moving hand to hand.

On the requirements of a force of, say, 20,000 men, organised in India, for service in foreign parts, as regards Officer for staff employ with the force, and as the best means of supplying them under the present organisation of the Native Army.

On the best means of educating Native Officers, so as to bring them up to the requirements of the present day as regards Military knowledge.

Critical accounts and reviews of the siege operations of Indian Campaigns.

On the necessity for systematizing of Military Dispatches and Reports, so as to prevent the future omission of reports on professional points.

The causes of the increase of crime in the Army in the hot season and its remedy.

On the advantages and defects of the system of organisation of Artillery by Brigades.

On the Typography of the Military Districts of India in its relation to strategy.

On Fortification in India.

On pontoons and Portable Bridges for Indian Service.

N. B. -This List is not meant to deter any one from writing on any other subjects. Any additional suggestion will be entered in the next Number.

## PATRON.

On the eve of the publication of this, the Vth. No. of their Journal, **THE COUNCIL OF THE UNITED SERVICE INSTITUTION OF INDIA** have to deplore the atrocious act which has at once deprived India of its enlightened **VICEROY**, and this Institution of its distinguished **PATRON**.

## VICE-PATRONS:

His Excellency **GENERAL LORD NAPIER OF MAGDALA**, G. C. B., G. C. S. I.,

*Commander-in-Chief in India.*

His Excellency **LIEUT.-GENERAL THE HON'BLE SIR AUGUSTUS SPENCER**, K. C. B.,

*Commander-in-Chief, Bombay Army.*

## COUNCIL.

Major-General Huyshe, R. A.

Colonel C. C. Fraser, C. B., V. C., 11th Hussars.

Colonel J. Watson, C. B., V. C., 13th Bengal Lancers.

Colonel Osborne, C. B., 6th Royal Regiment.

Colonel Ross, 14th Ferozepore Regiment.

Colonel McLeod Innes, V. C., Royal Engineers.

Colonel Hon'ble F. Thesiger, C. B., Adjutant General.

Colonel Dickens, C. S. I., Secretary to Government, Public Work Department.

Surgeon J. M. Cunningham, Sanitary Commissioner.

Surgeon A. F. Bradshaw, Surgeon to His Excellency the Commander-in-Chief.

*The rest of the Council have not yet been elected.*

## SECRETARY, (Acting.)

**LIEUT.-COLONEL JOHN BAILLIE**, Bengal Staff Corps.

*LIST of Members who have joined since the publication of  
No. 4 Proceeding.*

| Nos. | NAMES.                           | RANK.                  | CORPS.                       | STATION.      |
|------|----------------------------------|------------------------|------------------------------|---------------|
| 1    | Carter, F. ... <i>pd.</i>        | Surgeon ...            | 1st Goorkhās ...             | Dhurmsala.    |
| 2    | Beresford, G. ... <i>pd.</i>     | Major ...              | Staff Corps ...              | Bangalore.    |
| 3    | Pole, G. H. L. ...               | Lieutenant ...         | R. E., Mysore Commr. ...     | Toomkoor.     |
| 4    | Malthy, E. P. ... <i>pd.</i>     | Lieutenant ...         | Ditto ...                    | Mysore.       |
| 5    | Ludlow, E. S. ...                | Captain ...            | Mysore Commissioner. ...     | Shimoga.      |
| 6    | McGaun, T. G. ...                | Assistant-Surgeon ...  | Ditto ...                    | Shimoga.      |
| 7    | Little, A. B. ...                | Lieutenant-Colonel ... | Comdg. 25th Bom. N.I. ...    | Dhoolia.      |
| 8    | Fairbrother, J. ...              | Lieutenant-Colonel ... | 25th Bombay N. I. ...        | Dhoolia.      |
| 9    | Eales, G. D. ...                 | Major ...              | Ditto ...                    | Dhoolia.      |
| 10   | Withers, J. ...                  | Captain ...            | Ditto ...                    | Dhoolia.      |
| 11   | Beville, F. A. ...               | Captain ...            | Ditto ...                    | Dhoolia.      |
| 12   | Hennell, R. ...                  | Captain ...            | Ditto ...                    | Dhoolia.      |
| 13   | Straker, J. F. ...               | Staff Surgeon ...      | M. D. Bombay ...             | Kirkee.       |
| 14   | Addison, T. ...                  | Brgdr. Genl., C.B. ... | Comdg. Sind D. Army. ...     | Kurrachee.    |
| 15   | Thoyls, R. B. ...                | Major ...              | B. S. C., Cantt. Magste. ... | Kurrachee.    |
| 16   | Thorp, R. C. ...                 | Staff Surgeon ...      | Indian Medl. Dept. ...       | Kurrachee.    |
| 17   | Montrion, W. ...                 | Colonel ...            | Bombay Army ...              | Kurrachee.    |
| 18   | Oliver, V. ...                   | Captain ...            | 66th Regiment ...            | Kurrachee.    |
| 19   | Healey, I. ...                   | Captain ...            | Ditto ...                    | Kurrachee.    |
| 20   | Hall, G. W. ...                  | Captain ...            | Ditto ...                    | Kurrachee.    |
| 21   | Crosswell, G. ...                | Lieutenant ...         | Ditto ...                    | Kurrachee.    |
| 22   | Fosbery, E. H. ...               | Ensign ...             | Ditto ...                    | Kurrachee.    |
| 23   | Galtraith, J. ...                | Major ...              | Ditto ...                    | Hydrabad.     |
| 24   | Garrett, E. ...                  | Captain ...            | Ditto ...                    | Hydrabad.     |
| 25   | Rudd, J. T. ...                  | Captain ...            | 59th Regiment ...            | Mhow.         |
| 26   | Browne, H. ... <i>pd.</i>        | Lieutenant-Colonel ... | Deputy Commissioner ...      | Thayetmyo.    |
| 27   | McLeod, A. ... <i>pd.</i>        | Captain ...            | Royal Artillery ...          | Thayetmyo.    |
| 28   | Winsloe, R. W. C. ... <i>pd.</i> | Captain ...            | 21st. Fusiliers ...          | Madras.       |
| 29   | Thorburn, W. ... <i>pd.</i>      | Captain ...            | Ditto ...                    | Madras.       |
| 30   | Jenkins, T. M. ... <i>pd.</i>    | Lieutenant ...         | 36th Regt., M. N. I. ...     | Bangalore.    |
| 31   | Temple, R. C. ... <i>pd.</i>     | Ensign ...             | 21st Fusiliers ...           | Madras.       |
| 32   | Clements, J. ... <i>pd.</i>      | Major ...              | Bombay Staff Corps ...       | Kurrachee.    |
| 33   | Oldfield, J. D. S. ...           | Major ...              | 9th Bengal Cavalry ...       | Rawul Pindee. |
| 34   | Plowden, F. C. ...               | Captain ...            | Offg. Depy. Commr. ...       | Kohat.        |
| 35   | Hatch, W. S. ...                 | Colonel ...            | Royal Artillery ...          | Poona.        |
| 36   | Bayly, A. A. ...                 | Major ...              | Ditto ...                    | Poona.        |
| 37   | Wake, A. J. ...                  | Captain ...            | Ditto ...                    | Poona.        |
| 38   | Napier, G. ...                   | Major ...              | Ditto ...                    | Belgaum.      |
| 39   | Caldecot, F. J. ...              | Lieutenant ...         | Ditto ...                    | Aden.         |
| 40   | Blane, H. J. ...                 | Doctor ...             | Indian Medl. Dept. ...       | Rajcote.      |
| 41   | Lechmere, C. ...                 | Captain ...            | 18th Bombay N. I. ...        | Rajcote.      |
| 42   | Prideaux, R. A. ...              | Captain ...            | Bombay Army ...              | Rajcote.      |
| 43   | Nutt, H. L. ...                  | Captain ...            | Bombay Staff Corps ...       | Rajcote.      |
| 44   | Bythell, R. ...                  | Captain ...            | Ditto ...                    | Asserghur.    |
| 45   | Beale, E. C. ...                 | Brigadier-General ...  | Comdg. Dessa Bidge. ...      | Dessa.        |
| 46   | Bradford, W. W. K. ...           | Major ...              | 108th Foot ...               | Dessa.        |
| 47   | Nicholson, J. S. ...             | Captain ...            | Ditto ...                    | Dessa.        |
| 48   | Dyke, C. S. ...                  | Lieutenant ...         | Ditto ...                    | Dessa.        |
| 49   | Munro, A. ...                    | Lieutenant ...         | Ditto ...                    | Dessa.        |
| 50   | Reid, E. R. ...                  | Lieutenant ...         | Ditto ...                    | Dessa.        |
| 51   | Barclay, E. A. ...               | Ensign ...             | Ditto ...                    | Dessa.        |
| 52   | Tanner, O. V. ...                | Major ...              | 24th Bombay N. I. ...        | Dessa.        |
| 53   | Peile, F. S. ...                 | Lieutenant ...         | Ditto ...                    | Dessa.        |
| 54   | Radcliffe, G. B. ...             | Lieutenant ...         | Ditto ...                    | Dessa.        |
| 55   | Woods, H. G. ...                 | Colonel ...            | Cdg. 1/8th Kings Regt. ...   | Nuseerabad.   |
| 56   | Mayne, M. ...                    | Lieutenant ...         | 3rd Bombay N. I. ...         | Nuseerabad.   |
| 57   | Green, E. A. ...                 | Major ...              | 26th Bombay N. I. ...        | Nuseerabad.   |
| 58   | Merewether, G. ...               | Captain ...            | R. E., P. W. Dept. ...       | Bombay.       |
| 59   | Hailes, J. C. ...                | Colonel ...            | Royal Artillery ...          | Bombay.       |
| 60   | Peun, J. W. ...                  | Lieutenant-Colonel ... | Ditto ...                    | Bombay.       |
| 61   | Drought, J. T. ...               | Lieutenant ...         | 59th Regiment ...            | Mhow.         |
| 62   | Stack, C. E. ...                 | Captain ...            | 1st Bombay L. Cavy. ...      | Poona.        |
| 63   | McAllister, J. ...               | Assistant-Surgeon ...  | Ditto ...                    | Poona.        |
| 64   | Wilnot, F. ...                   | Captain ...            | 49th Foot ...                | Poona.        |
| 65   | Russell, G. ...                  | Lieutenant ...         | Ditto ...                    | Poona.        |
| 66   | Browne, W. H. ... <i>pd.</i>     | Lieutenant ...         | 18th Regiment ...            | England.      |
| 67   | Close, G. C. ... <i>pd.</i>      | Major ...              | 45th Foot ...                | Trichinopoly. |

*LIST of Members.—(Continued.)*

| NO. | NAMES.                  | RANK.              | CORPS.                    | STATION.                 |
|-----|-------------------------|--------------------|---------------------------|--------------------------|
| 68  | Graham, S. .. ..        | Captain ..         | Royal Horse Artillery     | Cawnpore.                |
| 69  | Macdonald, W. ...       | Lieutenant ..      | 12th Kings Regiment..     | Sealkote.                |
| 70  | Williams, H. P. ...     | Lieutenant-Colonel | Pay Master ..             | Umballa. [bad Deccan.    |
| 71  | Proudfoot, G. ...       | Major ..           | Mily. Secy. to H. H. ...  | The Nizam's Govt. Hydra- |
| 72  | Saunders, A. O. W. ...  | Captain ..         | Station Staff Officers .. | Thayetmyo.               |
| 73  | Thompson, H. ...        | Captain ..         | Brigade Major ..          | Chittagong.              |
| 74  | Molloy, E. ...          | Lieutenant ..      | 5th Goorkha Regt. ...     | Abbottabad.              |
| 75  | Newall, D. J. F. ...    | Lieutenant-Colonel | Royal Artillery ..        | Gwalior.                 |
| 76  | Tytler, J. A. ...       | Lieutenant-Colonel | Comdg. 4th Gk. Regt.      | Chittagong.              |
| 77  | Call, C. F. ...         | Lieutenant ..      | Royal Engineer ..         | Puchmuree.               |
| 78  | Shakespear, J. T. ...   | Major-General ...  | Bengal Staff Corps ..     | Fort William.            |
|     |                         | V. C., Major 25th  |                           |                          |
| 79  | Cameron, A. T. ...      | Regiment ..        | Garrison Intrprtr. ..     | Umballa.                 |
| 80  | McQueen, J. W. ...      | Captain ..         | Corps of Guide            |                          |
|     |                         |                    | Comdg. 5th P. I. ..       | Murdan.                  |
| 81  | Tottenham, H. L. A. ... | Captain ..         | 38th Native Infantry ...  | Fyzabad.                 |
| 82  | Barrow, J. L. ...       | Colonel ..         | B. Royal Artillery ...    | Trichonopoly.            |
| 83  | Venour, E. ...          | Captain ..         | 5th Regt. N. L. I. ...    | Benares.                 |
| 84  | Bright, R. O. ...       | Brigadier-General  | Comdg. Gwalior Dist.      | Morar.                   |
| 85  | Harger, J. ...          | Captain ..         | 2/25 Regt. Bridge. Major  | Morar.                   |
| 86  | Minto, J. C. ...        | Captain ..         | 6th Bengal L. I. ...      | Morar.                   |
| 87  | Browne, J. H. G. ...    | Lieutenant ..      | B. F., R. H. A. ...       | Morar.                   |
| 88  | Leonard, T. ...         | Captain ..         | Bangalore Rifle Volntrs.  | Bangalore.               |



*LIST of Officers who have agreed to undertake the duties of Corresponding Members for the United Service Institution of India at stations noted opposite their names.*

| NAMES.                                  | CORPS.                             | STATIONS.                       |
|-----------------------------------------|------------------------------------|---------------------------------|
| Lieut., Colonel J. Hills v. C. S. C. .. | Royal Artillery                    | Abbottabad.                     |
| Captain W. R. Craster ..                | Ditto                              | Agra.                           |
| Lieut.-Colonel W. J. Gray ..            | Ditto                              | Alahabad.                       |
| Major Conway-Gordon ..                  | B. M. Hydrabad Contingent          | Aurangabad.                     |
| Lieut.-Colonel H. N. D. Prendergast     | Royal Engineers                    | Bangalore.                      |
| Captain A. G. Waterfield ..             | Station Staff Officer              | Barrackpore.                    |
| Major W. Hicks ..                       | Brigade Major                      | Belgaum.                        |
| Lieut.-Colonel W. Barlow ..             | 5th Native Infantry                | Benares.                        |
| Captain G. Merewether ..                | R. E. P. W. Department             | Bombay.                         |
| Lieutenant E. B. Elles ..               | Royal Artillery                    | Bunnoo.                         |
| Major J. B. Hardy ..                    | Ditto                              | Cawnpore.                       |
| Captain D. McNeill ..                   | 41st Madras Nat. Infy.             | Cuttack.                        |
| Lieut.-Colonel Bialr Reid ..            | Bengal Staff Corps                 | Dalhousie (temporarily).        |
| Captain A. Batty ..                     | 2nd Goorkhas                       | Dehra Doon.                     |
| Captain G. B. Wolsely ..                | Station Staff Officer              | Delhi.                          |
| Major F. Story ..                       | 1st Goorkhas                       | Dhurmshala.                     |
| Captain W. Galbraith ..                 | 85th Light Infantry                | Duglaia.                        |
| Captain G. Lamb ..                      | Ordinance Department               | Ferozepoor.                     |
| Colonel R. Cadell, C. B. S. C. ..       | Royal Artillery                    | Fort St. George.                |
| Major B. L. Forster ..                  | Ditto                              | Fort St. George & Trichinopoly. |
| Captain W. Ker ..                       | 8rd Buffs                          | Fort William.                   |
| Captain F. C. Story ..                  | 26th Regiment                      | Fyzabad.                        |
| Captain J. F. Cologan ..                | 18th Native Infantry               | Gorruckpoor.                    |
| Lieut.-Colonel H. Beville, C. B. S. C.  | 1st Bilochee                       | Hydrabad, Sind.                 |
| Lieutenant W. S. Feat ..                | Brigade Major                      | Jacobabad.                      |
| Captain Fitz. G. Galloway ..            | Adjutant, 8th Brigade, R. A.       | Lucknow.                        |
| Captain R. H. Kesser ..                 | 37th Regiment                      | Meer Meer.                      |
| Captain Studdy ..                       | Royal Artillery                    | Meerut.                         |
| Captain A. G. Handcock ..               | 6th Native Infantry                | Morar.                          |
| Captain E. B. Cambell ..                | Guides                             | Murda.                          |
| Captain A. C. Crookshank ..             | 32nd Native Infantry               |                                 |
| Captain G. W. B. Collis ..              | 6th Royal Regiment                 | Peshawur. [war.                 |
| Captain J. Van-Stranbenzie ..           | Royal Artillery                    | Poona Bombay or Mahabesh-       |
| Captain Edward Gunter ..                | 50th Regt. Adjutt. General's Dept. | Poona and Bombay generally.     |
| Lieutenant W. Macdonald ..              | 12th K. G. Regiment                | Seacote.                        |
| Lieutenant R. G. Kennedy ..             | 8th Hussars                        | Secundrabad.                    |
| Lieut.-Colonel W. Dowell ..             | Royal Artillery                    | Setapoor.                       |
| Captain T. S. S. Brind ..               | 17th Regt. Station Staff Officer,  | Shillong.                       |
| Colonel H. A. Adams ..                  | 13th Bombay Nat. Infy.             | Surat.                          |
| Captain H. Collet ..                    | Dy. Asst. Qr. Mr. General          | Umballa.                        |
| Captain Bythell ..                      | Staff Officer                      | Asserghurh.                     |

*LIST of Members who have offered their services as Translators.*

| FRENCH.                               | GERMAN.                            | ITALIAN.                  |
|---------------------------------------|------------------------------------|---------------------------|
| Major W. L. Twentyman, 16 Hussars     | Captain Ottley, R. E. ..           | Major Siddons Young,      |
| Major E. Hills, 4th Regt. Cavy H. C.  | Captain D. S. Warren, 1-14th Regt. | B. S. C.                  |
| Major Siddons Young, B. S. C. ...     | Captain Edward Gunter, 59th Regt.  | Major C. Hills,           |
| Captain James Colquhoun, R. A. ..     | Lieutenant Sawyer, 10th P. I. ..   | 4th Regt., Cavy., H. C.   |
| Captain J. F. Fitzgerald Cologan, B.  | Lieutenant A. O. Green, E. E. ..   | Captain J. F. Fitz Gerald |
| S. C. ..                              | Lieutenant H. C. M. Turnbull,      | Cologan, B. S. C.         |
| Captain A. Crookshank, 32nd P. I. ... | 6th Royals                         |                           |
| Captain A. R. Loughman, Brigade       |                                    |                           |
| Major, Bareilly ..                    |                                    |                           |
| Lieutenant H. Sawyer, 10th P. I. ..   |                                    |                           |
| Lieutenant A. O. Green, R. E. ..      |                                    |                           |

TO THE MEMBERS OF THE UNITED SERVICE  
INSTITUTION OF INDIA.

THE Council of the Institution have much pleasure in announcing that they have accepted the liberal offer of one of the earliest of its Members (who desires for the present that his name may be withheld) to present a "**Gold Medal**" to the author of the best Essay or paper that appears in the first volume of the Proceedings of the Institution commencing in May 1871 and ending of April 1872.

The "**Prize Essay**" will be the paper the subject of which, in the opinion of the Council, is the most useful to the Army generally, and the style and treatment of which has been most ably handled.

There is no restriction of subject in the first instance, but, as the donor proposes to make the donation annual, he reserves to himself the selection of the subject for the Prize Essay for 1872-73 which will be duly announced.

All "**original**," papers, which have been received by the Secretary during the year, whether they have been already published in Proceedings or not, are eligible for the Medal, and will be submitted for the decision of the Council, and Members, who may still desire to compete, should send in their papers to him not later than the 1st May. Attention is specially directed to the Rules for Contributors in the Bye-Laws of the Institution.

By order of the Council,  
JOHN BAILLIE, LIEUT.-COL.,  
*Secretary, U. S. I. of India.*

Re  
To  
N  
Po  
Villa



*LIST of Members.—(Continued.)*

| No. | NAMES.                  | RANK.              | CORPS.                    | STATION.                 |
|-----|-------------------------|--------------------|---------------------------|--------------------------|
| 68  | Graham, S. .. ..        | Captain ...        | Royal Horse Artillery     | Cawnpore.                |
| 69  | Macdonald, W. ...       | Lieutenant ..      | 12th Kings Regiment..     | Sealkote.                |
| 70  | Williams, H. P. ...     | Lieutenant-Colonel | Pay Master                | Umballa. [bad Deccan.    |
| 71  | Froudford, G. ...       | Major ...          | Mily. Secy. to H. H. ...  | The Nizam's Govt. Hydra- |
| 72  | Saunders, A. O. W. ...  | Captain ...        | Station Staff Officers .. | Thayetmyo.               |
| 73  | Thompson, H. ...        | Captain ...        | Brigade Major             | Chittagong.              |
| 74  | Molloy, E. ...          | Lieutenant ...     | 5th Goorkha Regt. ...     | Abbottabad.              |
| 75  | Newall, D. J. F. ...    | Lieutenant-Colonel | Royal Artillery           | Gwalior.                 |
| 76  | Tytler, J. A. ...       | Lieutenant-Colonel | Comdg. 4th Gk. Regt.      | Chittagong.              |
| 77  | Call, C. F. ...         | Lieutenant ...     | Royal Engineer            | Puchmurree.              |
| 78  | Shakespear, J. T. ...   | Major-General ...  | Bengal Staff Corps ..     | Fort William.            |
|     |                         | V. C., Major 25th  |                           |                          |
| 79  | Cameron, A. T. ...      | Regiment ...       | Garrison Intrprtr. ..     | Umballa.                 |
| 80  | McQueen, J. W. ...      | Captain ...        | Corps of Guide            |                          |
|     |                         |                    | Comdg. 5th P. I. ..       | Murda.                   |
| 81  | Tottenham, H. L. A. ... | Captain ..         | 38th Native Infantry ...  | Fyzabad.                 |
| 82  | Barrow, J. L. ...       | Colonel ...        | B. Royal Artillery ...    | Trichonopoly.            |
| 83  | Venour, E. ...          | Captain ...        | 5th Regt. N. L. I. ...    | Benares.                 |
| 84  | Bright, R. O. ...       | Brigadier-General  | Comdg. Gwalior Dist.      | Morar.                   |
| 85  | Harger, J. ...          | Captain ...        | 2/25 Regt. Bdrge. Major   | Morar.                   |
| 86  | Minto, J. C. ...        | Captain ...        | 6th Bengal L. I. ...      | Morar.                   |
| 87  | Browne, J. H. G. ...    | Lieutenant ..      | B. F., R. H. A. ...       | Morar.                   |
| 88  | Leonard, T. ...         | Captain ...        | Bangalore Rifle Volntrs.  | Bangalore.               |

*LIST of Officers who have agreed to undertake the duties of Corresponding Members for the United Service Institution of India at stations noted opposite their names.*

| NAMES.                                  | CORPS.                                | STATIONS.                       |
|-----------------------------------------|---------------------------------------|---------------------------------|
| Lieut. Colonel J. Hills v. C. S. C. ... | Royal Artillery                       | Abbottabad.                     |
| Captain W. R. Craster ..                | Ditto                                 | Agra.                           |
| Lieut.-Colonel W. J. Gray ..            | Ditto                                 | Allahabad.                      |
| Major Conway-Gordon ..                  | B. M. Hyderabad Contingent            | Aurangabad.                     |
| Lieut.-Colonel H. N. D. Prendergast     | Royal Engineers                       | Bangalore.                      |
| Captain A. G. Waterfield ..             | Station Staff Officer                 | Barrackpore.                    |
| Major W. Hicks ..                       | Brigade Major                         | Belgaum.                        |
| Lieut.-Colonel W. Barlow ..             | 5th Native Infantry                   | Benares.                        |
| Captain G. Merewether ..                | R. E., P. W. Department               | Bombay.                         |
| Lieutenant E. R. Elles ..               | Royal Artillery                       | Bunnoo.                         |
| Major J. B. Hardy ..                    | Ditto                                 | Cawnpoor.                       |
| Captain D. McNeil ..                    | 41st Madras Nal. Infy.                | Cuttack.                        |
| Lieut.-Colonel Blair Reid ..            | Bengal Staff Corps                    | Dalhousie (temporarily).        |
| Captain A. Battye ..                    | 2nd Goorkhas                          | Dehra Doon.                     |
| Captain G. B. Wolsey ..                 | Station Staff Officer                 | Delhi.                          |
| Major P. Story ..                       | 1st Goorkhas                          | Dhurmala.                       |
| Captain W. Galbraith ..                 | 85th Light Infantry                   | Dugshale.                       |
| Captain G. Lamb ..                      | Ordnance Department                   | Ferozepoor.                     |
| Colonel R. Cadell, C. B. S. C. ...      | Royal Artillery                       | Fort St. George.                |
| Major B. L. Forster ..                  | Ditto                                 | Fort St. George & Trichinopoly. |
| Captain W. Ker ..                       | 3rd Buffs                             | Fort William.                   |
| Captain P. C. Story ..                  | 26th Regiment                         | Fyzabad.                        |
| Captain J. F. F. Cologan ..             | 18th Native Infantry                  | Gorruckpoor.                    |
| Lieut.-Colonel H. Beville, C. B. S. C.  | 1st Bilochee                          | Hydrabad, Sind.                 |
| Lieutenant W. S. Peat ..                | Brigade Major                         | Jacobabad.                      |
| Captain Fitz. G. Gallwey ..             | Adjutant, 8th Brigade, R. A.          | Lucknow.                        |
| Captain R. H. Kesser ..                 | 37th Regiment                         | Mean Meer.                      |
| Captain Studdy ..                       | Royal Artillery                       | Meerut.                         |
| Captain A. G. Handcock ..               | 6th Native Infantry                   | Morar.                          |
| Captain R. B. Cambell ..                | Guides                                | Murda.                          |
| Captain A. C. Crookshank ..             | 32nd Native Infantry                  |                                 |
| Captain G. W. B. Collis ..              | 6th Royal Regiment                    | Peshawur. [war.                 |
| Captain J. Van-Stranbenzie ..           | Royal Artillery                       | Poona Bombay or Mahablesh-      |
| Captain Edward Gunter ..                | 59th Regt. Adjutt. General's Dept.... | Poona and Bombay generally.     |
| Lieutenant W. Macdonald ..              | 12th K. G. Regiment                   | Sealcote.                       |
| Lieutenant R. G. Kennedy ..             | 18th Hussars                          | Secundrabad.                    |
| Lieut.-Colonel W. Dowell ..             | Royal Artillery                       | Sectapoor.                      |
| Captain T. S. S. Brind ..               | 17th Regt. Station Staff Officer,     | Shillong.                       |
| Colonel H. A. Adams ..                  | 13th Bombay Nat. Infy.                | Surat.                          |
| Captain H. Collet ..                    | Dy. Asst. Qr. Mr. General             | Umballa.                        |
| Captain Bythell ..                      | Staff Officer                         | Asserghurh.                     |

*LIST of Members who have offered their services as Translators.*

| FRENCH.                                            | GERMAN.                            | ITALIAN.                  |
|----------------------------------------------------|------------------------------------|---------------------------|
| Major W. L. Twentyman, 18 Hussars                  | Captain Ottley, R. E.              | Major Siddons Young,      |
| Major E. Hills, 4th Regt. Cavy H. C.               | Captain D. S. Warren, 1-14th Regt. | B. S. C.                  |
| Major Siddons Young, B. S. C. ...                  | Captain Edward Gunter, 59th Regt.  | Major C. Hills,           |
| Captain James Colquhoun, R. A. ...                 | Lieutenant Sawyer, 19th P. I. ...  | 4th Regt., Cavy., H. C.   |
| Captain J. F. Fitzgerald Cologan, B. S. C. ...     | Lieutenant A. O. Green, R. E. ...  | Captain J. F. Fitz Gerald |
| Captain A. Crookshank, 32nd P. I. ....             | Lieutenant H. C. M. Turnbull, ..   | Cologan, B. S. C.         |
| Captain A. R. Loughnan, Brigade Major, Bareilly .. |                                    |                           |
| Lieutenant H. Sawyer, 19th P. I. ...               |                                    |                           |
| Lieutenant A. O. Green, R. E. ...                  |                                    |                           |

TO THE MEMBERS OF THE UNITED SERVICE  
INSTITUTION OF INDIA.

THE Council of the Institution have much pleasure in announcing that they have accepted the liberal offer of one of the earliest of its Members (who desires for the present that his name may be withheld) to present a “**Gold Medal**” to the author of the best Essay or paper that appears in the first volume of the Proceedings of the Institution commencing in May 1871 and ending of April 1872.

The “**Prize Essay**” will be the paper the subject of which, in the opinion of the Council, is the most useful to the Army generally, and the style and treatment of which has been most ably handled.

There is no restriction of subject in the first instance, but, as the donor proposes to make the donation annual, he reserves to himself the selection of the subject for the Prize Essay for 1872-73 which will be duly announced.

All “**original**,” papers, which have been received by the Secretary during the year, whether they have been already published in Proceedings or not, are eligible for the Medal, and will be submitted for the decision of the Council, and Members, who may still desire to compete, should send in their papers to him not later than the 1st May. Attention is specially directed to the Rules for Contributors in the Bye-Laws of the Institution.

By order of the Council,  
JOHN BAILLIE, LIEUT.-COL.,  
*Secretary, U. S. I. of India.*

Re  
To  
N  
Pe  
Villa







## ORIGINAL PAPERS.

## I

**Military Report on the River Irrawaddy from  
Ava to Bamo.**

As an introduction to this Report, I will give a slight sketch of the general features of the country, on both banks of this great river, from the British frontier to the ruins of the ancient capital of Ava.\*

About nine miles north of the little frontier station of Thayetmyo, the boundary of British territory is marked by two white pillars, one on either bank of the Irrawaddy. The river here is about a mile and a half broad at the time of the year at which I write, *viz.*, August, and the current is, at all times, powerful.

On the right bank, a range of lofty hill hugs the shore for a distance of about fifteen miles, until, nearly opposite the large and thickly wooded Island of Loonghee, they take a more westerly direction; while on the east bank, the country is low, undulating, and covered with a thick jungle.

Villages and houses line both banks in profusion, but there is no appearance of extensive cultivation.

A few miles above Loonghee, the river is again divided into two channels by another large island, and from this, until the town of Menghla is reached, the course of the stream is twisting and irregular—the banks lofty and wooded.

It was on the low hills that command the angles here formed, that the Burmese made a most resolute stand against the British troops in 1826. First at Lekoh-ben—a strong stockade was constructed on the high ground that commands the river opposite the island above referred to—and, a few miles further north-east, a position was taken up at Melloon. The British troops, having dislodged the enemy from both these places, established their camp on the eastern bank at Patanago.

Menghla—situated some five miles north of Melloon—is a town of considerable importance, and the head-quarters of the *Woon*, or Governor of the district. It contains apparently about 5,000 inhabitants, and, for a Burmese town, is clean and well kept.

---

\* See Captain Rennie's Charts of river from Rangoon to Amarapoora.

Some distance above Menghla the river Yen flows into the Irrawaddy, and here again, in the promontory formed by the meeting of the two rivers, another stockade was established, and another futile attempt made to check our victorious advance. Navigation now becomes difficult and dangerous, the river being divided into many channels by low, sandy islands, many of which are completely hidden from view during the rainy months.

Mugway, on the left bank, and Memboo, on the right, are both populous and, to all appearance, thriving places.

The former contains about 6,000 inhabitants, and was the town at which the Mission to Ava in 1855 made their first halt in company with the deputation from the Burmese Capital: while the latter—a straggling place at the foot, and at the northern extremity of a range of low hills, thickly wooded and crowned with many white pagodas—is said by Captain Yule to be the nearest point to the Aeng Pass. Roads run from Memboo to Maphé at the foot of the pass, as well as to the now British town of Mendoon, from which passes also lead by Mae, in Aracan, across the mountains.

The Aeng Pass leads over the Yoma-doung at a height of 4,600 feet, and twenty miles further north is another pass by which General Morrison's force attempted, without success, to cross the same mountains in 1825. At this part of its course the great river is of immense width, varying from two to four miles from bank to bank. The extensive alluvial plain, which commences above Memboo, stretches for a distance of about seventy miles along the western shore, until it is interrupted by a range of barren, conical-shaped hills, which line the river's bank from the village of Leng to Pagán.

The eastern bank is, throughout this long extent, for the most part lofty; cliffs of red sandstone rising perpendicularly out of the water, while the country inland looks parched and inhospitable; until, beyond Pagan-glé, to quote Captain Yule, "the character of the river is more Gangetic; the banks of clay without visible rock; the churs and islands abounding in madars and acacia."

The important towns passed are, on the left bank, Ye-man-joung, on an inlet of the great sandstone cliffs, celebrated for the extensive petroleum wells in its vicinity; Pagan-glé, situated on the lofty bank, and containing about 1,000 houses; and Sillay-myo, formerly celebrated for silk weaving, but now driving an almost exclusive trade in lacquer work-boxes.

On the eastern bank, Sen-phio-joung, is the only place worthy of mention. Lying at some distance from the low and sandy bank, it is

approached by means of a creek running inland, which also leads to the populous city of Tsalen, some seven miles to the south-west, and said to contain about 15,000 inhabitants. From Sen-phio-jioung a practicable road leads across the mountains to Aracan.

The ruins of the Sacred City of Pagán lie in a re-entering angle of the river, a plain, seven miles in length and two in breadth, being literally covered with pagodas and temples of every conceivable shape and size, and in all stages of decay. The interesting old city is supposed to have been founded in A. D. 849, and destroyed by a Chinese army, consisting, according to Burmese legends, of 6,000,000 horse and 20,000,000 foot, in 1284. It was among the ruins of Pagán that the Burmese Chief Naweng-bhuyen, or "King of Sunset", made his last stand against the British troops under Sir Archibald Campbell in 1826.

At the northern boundary of Pagán a large village, Nyoung-oo, is situated, and beyond this, the sandstone cliffs again appear; the country inland, however, has, by no means, the dry and inhospitable appearance of that to the southward, both banks being thickly wooded and the land rich though little cultivated.

The next town of any importance reached—Koon-yawa—stands upon the western bank, partially hidden by trees; it contains about 800 houses, and from it a practicable road leads to the city of Pakhan, about ten miles inland at the foot of a pair of conical hills distinctly visible from the river.

Min-ghan—some fifteen miles further up the river, on its left bank—is a large town of 6,000 inhabitants, and drives a brisk trade in cotton, catch, wheat and gram. The principal merchants of this town, as is indeed the case with most of the large places on this great river, are Chinamen. A few miles north of Min-ghan is the little village of Yandaboo, where the Treaty of Peace was signed on the 24th February 1826, which closed the first Burmese war.

Between the two last named places the river Kyen-dwen—the largest tributary of the Irrawaddy—flows into the latter. This river rises in the mountains near Mogoung—an ancient Shan city, about one hundred miles north of Bamó—and from thence, passing northward, north-westward and west-ward through the plains of Payendawn, finally takes a southerly direction.

From Yandaboo to Kiouk-ta-loung—a distance of about fifty miles—the landscape changes in no material degree. To the westward lies a dead alluvial flat thickly wooded at places; while on the east the country is low but gradually rising towards a range of hills running parallel to, and at a distance of, about eight miles from the river.

Kiouk-ta-loung—partially hidden in lofty trees—contains from 400 to 500 houses; and from this place, steering up the broad river a westerly course and a few miles further on a south-westerly, the traveller soon comes in sight of the ancient capital which has given its name to the once famous but now effete and mis-governed Kingdom of “His Majesty of the Golden Foot.”

---

## AVA TO BAMO.

The ruins of Ava lie embosomed in a dense mass of lofty trees situated in the angle formed by the junction of the Myit-gué, or Little River, with the Irrawaddy. (See Plans 1 & 2.)

There is little now left of the old place but crumbling walls, rotten stockades, and shapeless mounds of earth, which once were parapets. It is surrounded by water on three sides: on the north and east by the above-mentioned rivers, and on the south by the little stream called Myo-than.

Opposite to Ava, on the right bank, is Tsagain, also an ancient capital although there is little left to tell the tale. Like Ava it is situated in a dense mass of wood; the groves and lanes of the old city still retaining some semblance of order and regularity.

The river Myit-gué rises in the Shan mountains to the north-west, and pursues a winding and contorted channel throughout its course; it is about 200 yards wide at the mouth, and is navigable for steamers for a considerable distance during the rainy months.

Proceeding up the Irrawaddy, from Ava, the channel becomes narrowed to about 800 yards across opposite the cluster of pagodas called Shwe-kyeh-yet. This place has all the appearance of a fort, the front and sides of the high promontory, on which the pagodas are constructed, being revetted with solid masonry rising out of the water to a height of fifty or sixty feet.

Shwe-kyeh-yet is superbly placed to defend the passage of the river here, but no precautions have been taken to arm it—three old rusty guns being its only defence.

Beyond this, the river becomes once more thickly studded with islands of various shapes and sizes; some wooded; some low and sandy; while, on the western bank, so numerous are the creeks and streams that it is no easy matter to distinguish them from the main land.

On a narrow promontory formed by the Great River on the west, and on the east and south by the Loung-ga-loh and Toung-ga-

REPORT ON THE IRRAWADDY

U. S. INST. No. V.

COPY OF A SURVEY BY MAJOR ALLEN, SHEWING POSITIONS

OF  
**AMARAPOORA, AVA AND TSAGAIN**  
WITH POSITION OF **MANDALAY** ADDED BY LIEUT. BROWNE



REPORT ON THE IRRAWADDY.

No. 1 U. S. INSECT. No V.

No. 3.

PLAN  
OF

THE CITY OF MANDALAY

Reduced to a scale by Lieut. Browne from a  
Burmese Drawing of the City

mah Lakes, lies the remains of the city of Amarapoora. It was abandoned by the present King in 1857, when the seat of Government was moved seven miles further north to Mandalay. Amarapoora was surrounded by a wall and ditch, both of which still remain in fair preservation, but the place has been almost entirely deserted by the Burmese and is chiefly occupied by Chinamen

Mandalay, (see Plan 3 and Photograph) the present capital of the Kingdom of Burmah, is situated about two miles from the river's bank, at the foot of an isolated hill 600 feet in height, and now crowned with several Buddhist temples.

The city is laid out in a perfect square, the sides of which run due north and south, east and west, and are, as nearly as possible, one mile in length. It is rendered secure against attack in the following manner:—a solid brick wall about twenty-five feet in height and three in thickness surrounds the city. Behind this an earthen rampart, thirty feet thick, has been thrown up, and this, being raised to within about four feet of the top, is allowed to slope away towards the interior.

There is little attempt at flanking defence, at intervals of about one hundred and fifty paces buttresses protruding, while at the angles two of these meeting take the form of a bastion. The wall is not loop-holed or provided with embrasures for guns, the top being crenelated after the fashion of ancient castles. Each of the four sides of this wall and rampart is provided with three gateways, built of masonry of immense thickness and solidity: the gate in the centre of the passage, which is about fifteen feet in width, is of teak wood studded with iron nails, and is about twenty feet in height and one in thickness.\* All the twelve gateways are similar in construction, and are protected on the outside by traverses of solid masonry so placed as to completely protect the passage from any fire that might be directed against it.

A moat, of about one hundred feet in breadth and six or seven in depth, encircles the city outside the walls. The escarp of the ditch is cut at a distance of about sixty feet from the wall, leaving a fine road between. This moat is kept full of water all the year round, except on the south side, where it is not quite completed.

Bridges cross it, on the south, east and north side—one, and on the west—that which faces the Great River—two. No precautions have been taken to defend these bridges if necessary. The roads, in the interior of the city, are wide but unmacadamized, being much broken up at places: they run in the same direction as the walls, dividing the city into rectangular blocks of houses. In the

---

\* The heights, &c., here given are only approximations, as I had no opportunity of measuring them.

centre of the city is the Palace, about three hundred and fifty yards square, and surrounded by a stockade, about twenty feet in height, of teak stakes nine inches in diameter, driven into the ground close together and firmly joined by bars of the same wood passing through them horizontally.

The Palace is divided mainly into three enclosures, after the manner shown in the Plan. Inside the stockade is a brick wall, after which an esplanade of considerable width then another brick wall, and so forth. There are three entrances, the main, and only public one, being in the centre of the east side; the two smaller ones, near the eastern ends of the northern and southern faces. The eastern entrance, as also the inner ones through the walls, is defended by a strong guard of soldiers, armed, some with muskets, some with *dahs*.\* In the centre enclosure all the valuables of the King are stored—guns, rifles, muskets, ammunition and treasure of every description. The Reception Hall of His Majesty is remarkable for its barbaric splendour: walls and pillars loaded with gold leaf, while dirt and neglect seems to pervade everything. Round the walls are racks of guns and rifles by the best London makers, from the corroded barrels of which it is plain that air and moisture have been allowed unmolested to do their work of destruction.

The suburbs of Mandalay stretch for miles to the east and south of the city, and to the west as far as the river's bank.

The population is estimated at about 20,000 inside the walls, and three times that number without. It is heterogeneous: consisting of Europeans—where are they not?—Natives from India, Munnipoor and Chittagong; Shans, Siamese and Chinese, all of whom—except of course the Europeans—have intermarried with the Burmese.

At the north-east corner of the city is the isolated hill already mentioned; the ascent is rocky and precipitous (though not too much so for Field Artillery,) but the sight from the summit is grand and imposing in the extreme. Below is the square city with its interminable suburbs spread out like panorama; the Shan mountains to the west; the Tsagain hills to the east; the windings of the mighty river between, with its numerous quaintly-shaped boats and temple-studded banks, as it rushes onwards to the sea, is a sight once seen not easily to be forgotten.

Opposite the capital, on the right bank, the Tsagain hills look down upon the river, at places over-hanging the stream, and again receding to a distance of several hundred yards from the water's edge. These hills contain great quantities of valuable marble, and vary from about three hundred to a thousand feet in height. They extend from Tsagain

---

\* An instrument not unlike a butcher's chopper, used by Burmese for numerous purposes.



to the village of Ontazen, a distance of about fourteen miles, after which they die away into gentle undulations. Mengoon, on the right bank, has become famous for the remains of a pagoda of colossal proportions; it was destroyed by an earthquake when only half completed, otherwise it would certainly have been one of the largest masses of solid masonry in the world. At this place also is an enormous bell, said to be the largest in the world after that of Moscow Cathedral; it is ninety tons in weight, or fourteen times as large as the great bell of St. Paul's.

Nearly opposite Mengoon, at a distance of five miles from the east bank, is the isolated mountain of Kalama, about fifteen hundred feet in height, and still further to the eastward, the Shan hills, an extensive and lofty range running parallel to, and at a distance of about ten miles from the river, for about forty miles, when they suddenly close in upon it, following the course of the stream throughout the Third or Lower Defile.

A mile or two north of the hill of Kalama, is the fertile district of Madara, whence most of the fruit and vegetables consumed in the city are obtained. The town of Madara contains about 2,000 houses, and is approached by a stream which, rising in the Shan hills, to the westward, discharges itself into the Irrawaddy at the little village of Powa. Another small tributary the Sackyen joins a few miles further north, and from this to Singu-myo (the southern extremity of the Lower Defile) extend two large islands thickly wooded and containing several small villages. To the westward the country is undulating and clothed with dense woods.

Singu-myo—a town of about 500 houses—lies in a bend of the river on the east bank; a road runs from this place to the principal ruby mines. The Third Defile, which commences here and ends at Malay and Tsampenago, is picturesque throughout. Both banks are high (the left being the more lofty) and covered with an impenetrable jungle; a few villages appear at intervals, and small mountain streams join the broad river. The current is not powerful—considering the contracted channel—from 300 to 400 yards across.

There is little or no sign of cultivation even in the vicinity of the villages; while the numerous fishing apparatus that may be seen along both banks denote pretty clearly that the inhabitants trust not a little to the finny tribe for subsistence.

The hills in the neighbourhood of Malay and Tsampenago—both small places—are said by Professor Oldham and Dr. Williams to contain many valuable minerals; coal in immense quantities; gold, silver and precious stones, particularly rubies, extensive mines of which lie at a distance of about thirty miles to the eastward.

Beyond Malay the channel once more opens out, and low, sandy islands make their appearance above the water. On the right bank the Mingo hills run parallel to the river, interrupted further north by the valley of the Tongay—a good-sized river which joins the Irrawaddy here. The country on the east is low, except nearly opposite the confluence of the river above referred to, where the spurs of a range of hills approach close to the bank. The villages about here are poor, and the absence of pagodas marked. Tagoung and old Pagán, lying close together on the left bank and now poor-looking little places, were once royal cities. Dr. Williams, who visited them in 1863, found the remains of the fortifications of both; at Tagoung he found part of the city wall about twenty feet high and backed by an earthen rampart.

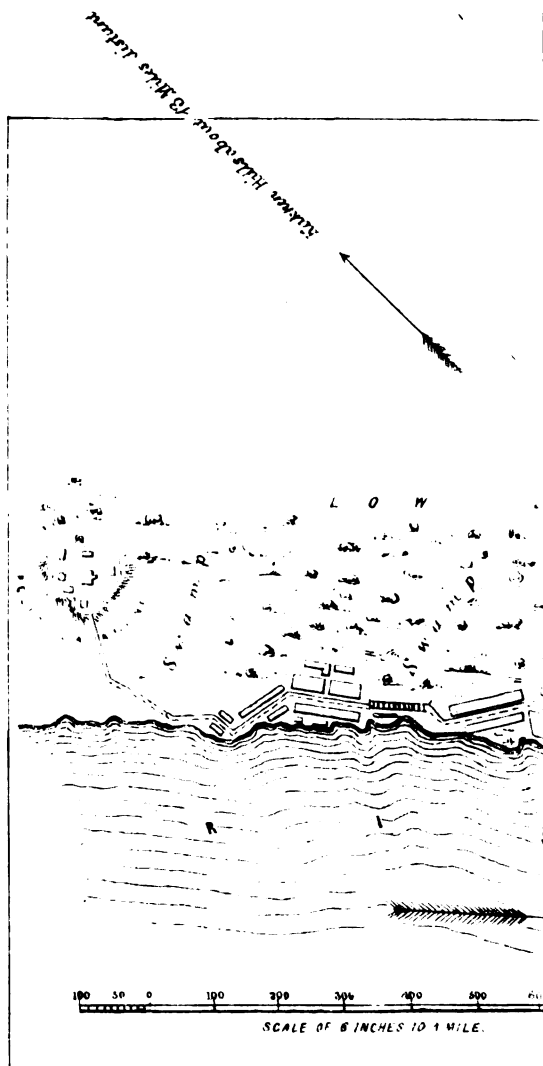
The next towns of importance,—Myadoung on the left bank, and Thigine on the right, contain some 300 houses each, and the latter situated on a projecting spur of the Mingo hills, is a lively, prosperous-looking little place. At both these places are the remains of old stone forts. The Delain river here, and a few miles further north the Shwe-lee, form their junction with the Irrawaddy; the latter has the appearance of being a fine river, but is said by Dr. Williams to be much encumbered with shoals and sandbanks. At about three days' journey from its mouth it divides into two branches,—the greater going by Momiet to the Shan country, and the lesser to Mogouk.\* To return to the Irrawaddy—both banks are low and swampy, while navigation has become no easy matter by reason of the numerous shoals and sandbanks that interrupt its course. The range of hills to the westward still continue to follow the course of the stream, but at some distance from it. Kathu is the only place worthy of mention, containing some 250 houses; it was once the boundary town between Ava and the Shan States. About fifteen miles above this place the course of the river is changed from north-west to south-west, both banks continuing low and covered with tall elephant grass, until, at the entrance of the Middle Defile, the hills suddenly closing in upon the stream, contract its channel to some 150 or 200 yards across. Between the northern elbow of the river and the mouth of the Defile is the town and sacred island of Shwe-goo; the latter is held in great veneration by the Burmese, and is positively a forest of pagodas.

The scenery throughout the Second or Middle Defile is exceedingly striking; precipitous mountains, clothed in impenetrable forest, tower overhead, while the mighty river below, confined to one narrow channel, hissing, boiling, and forming itself into huge eddies, rushes down with resistless force.

---

\* "Through Burmah to Western China," by Dr. Clement Williams.





This Defile may be said to end at the small village of Sekang, close to which is Koung-toung, now a small place, but once—until destroyed by Kakhens—a large town; it is said to have witnessed the defeat of the Chinese army by the Burmese in 1769.

The Tseenkhan joins the Irrawaddy here; great quantities of teak are floated down this stream from the forests inland. From Koung-toung the course of the river is once more changed, running almost due north and south, the channel gradually widening out, until, as Bamó is approached, it has the appearance of a large lake studded with low and sandy islands.

The city of Bamó (see Plan 4) is in Latitude  $23^{\circ} 55' 23''$ , and, as is the case with most of the towns on this river, consists mainly of one street, except near the centre, where two or three smaller ones branch off at right angles.

On the land side Bamó is completely enclosed by a stockade of teak stakes about fifteen feet high, it is not loop-holed, but rough platforms are raised at intervals to enable the defenders to see over and use their weapons with effect. There are three gates,—a north, south and east,—which, though once strong, have been allowed to get sadly out of repair. The city throughout has a poor and neglected appearance—except the Chinese quarter—and there is nothing to justify the belief that it could ever have been a rich or prosperous town. The population, which may be estimated at about 3,000, is made up of Burmese, Chinese, Shans and other cognate races who inhabit these regions.

The suburbs outside the stockade extend for some distance along the shore north and south, the residence of the British Political Agent, now building, being on a knoll at the northern extremity.

The confluence of the river Taping with the Irrawaddy takes place a couple of miles above Bamó. This river, rising in the mountains far away to the north-east, passes through a gorge or pass at the head of the Sanda valley, then, finding its way through the Kakhen mountains, pours over a rocky bed with a noise like thunder, and finally, assuming the proportion and character of a large river, empties itself into the Irrawaddy \*

The Taping is navigable for some fifteen or twenty miles from its mouth, after which are rapids.

Of the tribes that inhabit these wild regions, by far the most numerous, if not the most important, are the Shans. These are, for the most part, tributary to the Burmese, and are to be found from the borders of Munnipoor to the heart of Yunan, and from the valley of Assam to Bankok and Cambodia. They are a quiet, dirty and inoffensive race.

---

\* "Bamó Expedition in 1867," by Captain Bowers, R. N. R.

The Kakhens inhabit the lofty mountains (from 6,000 to 10,000 feet in height) to the north and north-west, and, though they possess no written language, have some semblance of Government; each district being ruled by Chiefs, or Tsaubwas, having magistrates under them. They are a wild and brutal set of savages, hostile to the Burmese, but friendly towards Europeans, and most anxious to establish trade relations with British merchants.

The Poloungs reside in the mountains north-east of Bamó, and, in appearance and proclivities, resemble the Kakhens. Most of the above tribes acknowledge, in theory, the Burmese suzerainty.

Beyond the Burmese boundary on the east (sixty miles from the river at Bamó) the Panthays—a brave and ambitious race—rule supreme. These Panthays are Mahomedan Chinese who, having bound themselves into a compact body by the indissoluble bond of their faith, have not only succeeded in holding their own in this war of independence, but have wrested from their former masters much of that vast territory which for centuries has formed the Chinese Empire. They are ruled by a King—Suliman the First\*—whose capital is Talifoo in the province of Yunan. The Panthays gave every assistance to Major Sladen's Expedition in 1867.

As the nature and habits of the inhabitants of a country, through which a reconnaissance is made, forms no unimportant part of it, I will close this Report with the following excellent description of the character of the Burmese given by Major Grant Allen seventeen years ago:—

“Unlike the generality of Asiatics, the Burmese are not a fawning race. They are cheerful and singularly alive to the ridiculous; bouyant, elastic, soon recovering from domestic or personal disaster. With little feeling of patriotism they are still attached to their homes, greatly so to their families. Free from prejudices of caste or creed, they readily fraternise with strangers, and, at all times, frankly yield to the superiority of the Europeans. Though ignorant, they are, when no mental exertion is required, inquisitive, and to a certain extent eager for information; indifferent to shedding of blood on the part of their rulers, yet not individually cruel; temperate, abstemious and hardy, but idle, with neither fixedness of purpose or perseverance. Discipline, or any continued employment, becomes irksome to them, yet they are not devoid of a certain degree of enterprize. Great dabblers in small mercantile ventures, they are (the women especially) a race of hucksters; not treacherous or habitual perverters of the truth, yet credulous and given to monstrous exaggeration; where vested with authority, arrogant and boastful; if unchecked, corrupt, oppressive and arbitrary; not distinguished for bravery, while their Chiefs are

---

\* The son of a horse-dealer.

notorious for cowardice, for with the latter cunning in war ranks before courage. Inexpert in the use and careless in the preservation of their arms, they are indifferent shots, and though living in a country covered with forest, are not bold followers of field sports."

"Notwithstanding, in the late war, when opposed to our troops, they failed much in determination, they would nevertheless prove a most unrelenting foe to an enemy taken at a disadvantage, their captivity on such an occasion making them the more hurtful, and their previous fear the more cruel."

EDMOND BROWNE, LIEUT.,  
*Instructor in Musketry, and Interpreter,*  
*2nd Battn., 21st Fusiliers.*

---





II

## Historical Record of the 10th (or Travancore) Regiment, Bombay Native Infantry.

---

THIS Regiment was raised by drafts from the 1st, 2nd and 4th  
A. D. 1797. Regiments, Native Infantry and Marine Battalion,  
and was added to the Bombay Establishment on  
the 14th October 1797, in accordance with the Subsidiary Treaty with  
His Highness the Rajah of Travancore, wherein it was stipulated  
that it should be held in constant readiness to march to the Rajah's  
assistance, on His Highness's requisition.

It was called the 2nd Battalion of the 5th, or Travancore, Regiment of Native Infantry.

Its first commanding officer was Captain Ajewell. The Headquarters were stationed at Calicut, and the Battalion was there formed and drilled.

In the following year, it was employed on active service with  
1798. the Field Force under the command of Major-General Bowser, and was distributed in detachments throughout the revolted districts of Kotium.

During the year 1799 the Battalion was employed in detachments  
1799. in the territory of the Pysche Rajah, and suffered much from severe service; it was halted for a short time at Nuggur in Soonda.

In the year 1800 it formed part of a Force under Major-General  
1800. Bowser, and took part in the operations on the frontier of Mysore under the Hon'ble Colonel Wellesley. In April of that year, under the command of Colonel Tolfrey, it attacked and carried the post of "Anakery."

A detachment, sent to the relief of "Montrano" on the 3rd of August, distinguished itself conspicuously in an engagement with the enemy, in which the latter were completely defeated. The gallantry of the men of the 10th in this action was brought to the notice of Government by the Hon'ble Colonel Wellesley, and Havildar Mooraree was promoted to Jemedar in G. G. O. of 3rd November, "expressly in reward of his distinguished bravery on that occasion." The "good conduct of the Battalion, under circumstances of un-

"common fatigue and difficulty incident to the nature of the "service in this year," received the warmest praise from the Hon'ble Colonel Wellesley.

In October, it was again stationed at Nuggur in Soonda. On the 16th November it marched and joined the Force under the Hon'ble Colonel Wellesley, and was employed under his orders on active service in the Wynaad country until the end of 1802. In the latter year, it held several posts and suffered severely in their defence against the enemy.

In 1803, the war in the Wynaad district being over, the Battalion was ordered to Tellicherry to recruit after its losses, and was stationed there during the whole of the year.

1804. In 1804, the Battalion was moved to Calicut.

In 1805, it marched to Bellary and served with the Field Force under the command of Major-General Campbell.

In 1807, it was moved to Goa and continued there during the whole of the year under the command of Major Skelton. Its strength in officers at this time was 2 Field Officers, 4 Captains, 11 Lieutenants and 5 Ensigns.

In 1809, the Battalion, under Major Jardine, was on active service in Beanah and Canara, occupying different posts.

In 1810, it returned to Goa and was again stationed there under the command of Major Jardine.

In 1812, under Major Cox, it was moved to Surat, and detachments were sent to Broach, Panarie, Kaira and Chickley.

In June 1816, the flank Companies, under Captain Gibson, joined the flank Battalion of Colonel East's Force at Baroda, and were present with that Force in Waghur and Cutch, also at the taking of "Bhooj" and "Anjar," and the reduction of the province of Okhamundel.

In October, the Battalion left Surat, and was employed as a Field detachment in pursuit of the Pindarries through the district of Atavesey.

The Battalion continued in the field during the early part of 1817, and returned to Surat in June. It was highly complimented for the services it had performed in the field by Major-General Lawrence, and in a letter from the Adjutant General of the Army.

In October, the flank Companies marched from Baroda with Lieutenant-Colonel Elrington's Force, were present at the reduction of the Forts of "Pahlunpore" and "Deesa," and afterwards returned to Baroda. On the 4th December, they marched with Sir William Grant Keir's Force for Malwa, and from Rutlam were sent on in advance to join Sir John Malcolm, which they did immediately after the Battle of "Mehidpoor." They then proceeded with the Force in pursuit of Holkar, and were present at the engagement at "Mundisore," in the end of December, when his Bazar and stores were captured.

In January 1818, three Companies were sent from Surat against  
A. D. 1818. "Conweer," in the Northern Concan, which surrendered to them, and they returned to Head-Quarters on the 5th of March.

On the 14th February, a Company, under Captain Rigby, was present at the taking of "Nowapoor," and was highly complimented in General Orders of 26th February.

The flank Companies rejoined Head-Quarters on the 1st of May, and on the 27th, the Battalion, under Major Jardine, was sent on active service into Kandeish; it was present, on the 30th of November, at the capture of the Fort of "Amulnair," and afterwards escorted the Arab prisoners there taken to Jaulnah.

A detachment of the Battalion, under Lieutenant James Crosby, distinguished itself in the early part of the year, and the Governor in Council, in General Orders of 21st May, expressed his "cordial approbation of the zealous and intrepid conduct of Lieutenant Crosby, Subadar Kisson Sing, and those engaged in that brilliant affair."

The records of the Regiment for these first twenty-one years of its existence were unfortunately lost, together with a quantity of regimental property, some time afterwards when crossing the River Taptee, which is the reason that no more detailed account can be given of the severe service to which it was exposed, and the distinguished part it took in the various operations of that period.

1819. In March 1819, the Battalion arrived at Malligaum.

In January 1820, the Battalion marched from Malligaum to  
1820. Kopergaum, where, on the 3rd of March, Lieutenant-Colonel Jardine handed over command to Captain Gibson. In June, a native officer's party escorted Nanajee Rao Holkar from Nimbur Dehhra to Nassick. In September, the Battalion marched to Bhewndy, and immediately proceeded under orders from Major-General Smith, C. B., to occupy various posts in

the Northern Concan. In November, the Head-Quarters were moved to Sattara.

A. D. 1821. In 1821, stationed at Sattara under command of Major Gibson.

In General Orders of the 1st February the facings of the Regiment were changed from green and silver to black velvet and gold, and new colors (black) presented to the Regiment.

1822. Stationed at Sattara.

1823. In February 1823, the Battalion marched from Sattara to Bhowndy.

In 1824, on the re-organization of the Army, this Battalion became the 10th (or Travancore) Regiment of Bombay Native Infantry.

1824.

In October, the Head-Quarters and Right Wing were moved to Surat.

1825. In February 1825, the Left Wing joined Head-Quarters at Surat.

In April, the establishment was increased to 1,000 men.

In May, a detachment of 200 men, under Captain Ponget, was ordered on Field service, and employed in various parts of the Atavesey, Broach and Jumbosheer districts.

1826-7. Stationed at Surat under Major Whitehill.

1828. In January 1828, the Regiment marched to Mhow.

In March 1829, on being relieved by a Bengal Native Infantry Corps, the Regiment quitted Mhow for Malligaum, and arrived there on the 3rd of April.

1829.

In May of this year, the establishment was reduced to 8 Companies and 640 Privates.

In 1830 and 1831, stationed at Malligaum under Lieutenant-Colonel Whitehill.

1830-1. In the former year, Lieutenants Threshie and Morton were employed on Field service in the Dhangs under Lieutenant Outram.

1832. In January 1832, the Regiment marched from Malligaum to Asseergurh.

In 1823 and 1834, stationed at Asseergurh under Captain Cathcart.

1833-4. In November, the Head-Quarters and Right Wing marched from Asseergurh *en route* to Belgaum.

The Right Wing reached Belgaum on the 11th January 1835,  
A. D. 1835. and the Left Wing arrived there from Asseergurh  
on the 13th March.

In November, a detachment of 300 Rank and File, under Captain  
Hallum, marched to Vingorla.

1836. In 1836, stationed at Belgaum under Lieutenant-  
Colonel Morse.

In February, the two flank Companies, under Captains Browne  
and Hume, marched against the Hill Fort of "Pargurh," which  
surrendered.

In 1837, a detachment of 150 Rank and File, under Lieutenant  
1837. Prendergast, was despatched by forced marches, *viâ*  
Vingorla to Mangalore, to assist in quelling an  
insurrection which had broken out there. This detachment was  
employed in the Mangalore districts till June, when it returned to  
Vingorla.

In November, the Regiment marched for Poona and suffered  
severely on the road from cholera.

In 1838, stationed at Poona under Major Cathcart. A Band was,  
1838. during this year, first established in the Regiment.

Subadar-Major Seetul Pursad was, in G. G. O. of August, admit-  
ted to the first class of the Order of British India with the title of Sir-  
dar Bahadoor.

In December, the Regiment marched to Bombay.

1839. In March 1839, 300 Rank and File proceeded  
to Tanna under Captain Browne.

In August, the strength of the Regiment was increased to 9 Com-  
panies.

In November and December, the Regiment embarked for Aden  
on emergent service.

The Regiment formed part of the first Garrison of Aden on its  
1840. capture, and remained quartered there under com-  
mand of Major Cathcart for four years.

During the first two, it was engaged in frequent skirmishes and  
conflicts with the Arabs, who made repeated attempts, by force and  
treachery, to master the defences, sometimes even obtaining a footing  
inside for a few moments, but they were always driven out again  
with severe loss.

The most serious of these attacks occurred on the 21st of May and  
7th July 1840, when the enemy succeeded in inflicting some loss on

D

the defenders before they were repulsed. Sepoy Bheemah, No. 7 Company, received a badge to be worn on the arm for having been the first to discover the advance of the enemy. On the 21st July, Lieutenant-Colonel Capon, commanding at Aden, expressed, in Station Orders, his approval of "the conduct of the officers and men who repulsed these daring attacks," and specially thanked Captain Browne of the 10th Regiment, N. I., for his conduct and exertions.

On the 5th of October 1841, two hundred men of the 10th, under Major Cathcart, and accompanied by Captain Hume, Lieutenants Jackson and Ayrton, and Ensigns Gell and Coley, marched at sunset to the Turkish Wall, and there joined a Force under command of Colonel Pennycuik, C. B., which proceeded into the interior, attacked and destroyed the forts of Shaik Mehdi and Shaik Othman, and, after some long and harassing skirmishing with the Arabs in a wood near the latter place, returned to Aden on the night of the 6th. The steadiness and gallantry of the Troops were acknowledged in Station Orders by Colonel Croker, C. B.

1842-3. Stationed at Aden.

In February 1844, nearly half the lines were destroyed by a fire which broke out at about 2 A. M. of the 13th. 1844. Government having issued materials, they were re-built within one month after this occurred.

On the 7th April, the Regiment quitted Aden, having been relieved by the 47th Madras Native Infantry, and arrived at Bombay on the 17th April.

Colonel Croker, commanding at Aden, on the departure of the Regiment, had reported to the Commander-in-Chief "their excellent conduct and good and faithful services" while under his command, saying that they had "ever been ready and willing to perform with cheerfulness and in a soldier-like manner any duty required of them;" and this Report was forwarded to the Hon'ble the Governor, who expressed his pleasure and satisfaction thereat.

On the 15th July, Lieutenant-Colonel Cathcart handed over command of the Regiment to Major Browne, and left to join the 24th N. I., to which he had been transferred.

In the latter part of this year and beginning of the next, the Regiment was again in the Field, employed, in two detachments, in the suppression of the revolt in the Southern Concan.

The first, consisting of the Head-Quarters and four Companies, under Major Browne, with Lieutenant Hessman (attached from 22nd N. I.) and Ensigns Billamore and Lester, whilst on its march to Warree,

met with great opposition from the insurgents, who were strongly and in great numbers posted in the "Acherry" Pass; after a few hours skirmishing, with some loss on both sides, the enemy were driven out, the pass taken, and the detachment continued its march towards Warree.

The other detachment, consisting of three Companies, under Captain Hume, with Lieutenants Pelly and MacGowan and Ensign Schneider, had, in the meantime, marched to Maungaum, and was stationed there for some time, in an isolated position, surrounded by the rebels; it was, until the 12th of January, constantly engaged in active operations against them; on that date it joined the Head-Quarters at Dookun-warree where Colonel Carruthers' Brigade was encamped.

On the 23rd of January, three Companies of the Regiment, under the command of Lieutenant and Adjutant Ayrton, A. D. 1845. with Lieutenant Coley and Ensign Fearon, while on the march from Malwan to the interior, encountered a strong body of the insurgents headed by Soobhana Nickum; the latter were surprised in a garden near the village of "Aroosh," in the neighbourhood of the Fort of "Rangna," some prisoners were taken by the detachment, and also gold and silver ornaments to the value of more than sixteen hundred Rupees.

At the end of the month the detachment was re-called to Malwan, and from thence proceeded to the country south of Vingorla, where it was engaged till the end of April in patrolling the British frontier, from the mouth of the Terricole river to the post of Banda, sixteen miles inland. During this time it was constantly employed in scouring the country and captured many rebels; it finally, at the conclusion of the campaign in May 1845, returned to Vingorla.

During these months the Head-Quarters under Major Browne, which in addition to the officers before enumerated had been joined by Brevet-Captain Johnstone and Lieutenant Lodwick, had been serving with Lieutenant-Colonel Outram's Light Brigade in Sawant Warree, and were present in the night attack at "Dewsen," when Lieutenant Lodwick was severely wounded, and at the investment and capture of the Forts of "Munohur" and "Munsuntosh," which were held by the rebel chiefs with many followers. At the assault on "Munohur" on the 25th of January, the Regiment suffered severely, Captains Hume and Johnstone being amongst the wounded.

The Regiment, which had been detached from the Field Brigade, afterwards joined in an attack upon the enemy occupying the strong and difficult country near "Pattia. After the rebels were driven from this position, a standing camp was formed there and held by the Regiment until the close of the campaign, when it marched to Vingorla, and the other detachments rejoined.

On the occasion of the breaking up of the Light Field Brigade an order was published by Lieutenant-Colonel Outram, from which the following extracts are taken :--

"Major Browne, who occupied the wildest and strongest portion" of the country, which his detachment continually scoured, was especially successful in securing great numbers of the enemy's cattle, large quantities of grain, &c. To Major Browne's constant vigilance I attribute in great measure the Rebel Chiefs of Neemala having been compelled to surrender to the Goa Government. A moveable detachment under Captain Johnstone, 10th Regiment N. I., was at the same time incessantly occupied in searching the jungles in the interior, and the Lieutenant-Colonel has repeatedly reported to Government his obligation to Captain Johnstone and the officers and men of the detachment under his command, which has evinced its sense of their services by the selection of Captain Johnstone to the temporary command of the Sawant Warree Local Corps."

True Extract

SAWANT WARREE; }  
30th April 1845. }

(Signed) J. STANNUS, MAJOR,  
Staff Officer.

During the remainder of the year the Head-Quarters were stationed at Rutnagherry with detachments at Vingorla, Malwan and Kuncowlee.

In January 1846, the Regiment returned to Bombay for Garrison duty, but was suddenly ordered to embark for A. D. 1846. Scinde in place of the 9th Regiment, N. I., reported unfit from sickness.

On the 23rd January of this year, Percussion Arms were first issued to the Regiment.

In April, the Regiment was moved to Gharra, where it relieved a detachment of the 3rd Regiment, Native Infantry.

In January 1847, the Regiment, under command of Major Browne, marched from Gharra to Kurrachee, and there embarked for Bhooj.

In March of this year, the strength of the Regiment was reduced to 5 Havildars, 5 Naiques, 85 Privates per company.

In April, Major Browne left for England, and Brevet-Major Morton succeeded to the command temporarily.

In November, the establishment was further reduced to 750 Privates.



The Regiment built new Lines at Bhooj during this year.

A. D. 1848. Stationed at Bhooj under the command of Brevet-Major Morton

1849. Stationed at Bhooj under the command of Major Hume.

On the 15th November, the Regiment received new colors.

At the end of the year the Regiment marched by Wings to Deesa.

1850-51-52. Stationed at Deesa under the command of Major Hume.

Stationed at Deesa. In November of this year, Major J. G. Hume vacated the command of the Regiment on promotion to Lieutenant-Colonel, and made over command to Captain Coley temporarily.

On the 28th of the same month, the Regiment marched from Deesa, and arrived at Nusseerabad on the 23rd December, Captain Gell having, in the meantime, joined and assumed command. New Lines were built, by contract, on arrival at Nusseerabad.

1854. Stationed at Nusseerabad under command of Lieutenant-Colonel Hawkins.

On the 19th of December of this year, the Head-Quarters and 7 Companies marched from Nusseerabad to Jehazpoor, and joined a Field Force under Sir Henry Lawrence, K. C. B., for service against certain disaffected Rajpoot Chiefs. The following officers were with it:—Captain Coley, commanding, Lieutenant and Adjutant James, Lieutenants Richardes, Pierce and Burd, Ensign Durand, and Assistant-Surgeon Murray.

On the 13th of March, the Field Force having been broken up, the Regiment returned to Nusseerabad.

Sir Henry Lawrence, Governor General's Agent, Rajpootana, on its departure, congratulated the commanding officer on the appearance of the Regiment and its discipline, and remarked that he had never heard a complaint against a man of the Corps during the time it had been under his orders.

The Regiment was commanded during the greater part of this year by Major H. Vincent.

1855. Stationed at Nusseerabad under the command of Major Vincent.

1856. In January of this year, the strength was raised to 800 Privates.

Under orders from Army Head-Quarters, the Regiment quitted Nusseerabad on the 16th February and marched, *viâ* Deesa and Ahmedabad, to Cambay and embarked for Foreign Service in Persia, but owing to news having been received of the conclusion of peace with the Persian Government, it was ordered to Bombay for Garrison duty, and arrived there on the 10th of April.

In July of this year, the establishment was increased to 12 Companies and 1,000 Privates.

The Regiment had only been a few months in Bombay, when it was again called upon to take the Field to aid in the suppression of the rebellion which, excited by the mutiny of the Bengal Troops, had spread throughout the States of Rajpootana and Central India.

On the 23rd November, the Right Wing, under command of Captain MacGowan, with Lieutenants Roome, Burd, Durand and Harris, embarked at Bombay for Mandavie, and joined there a Field Force under command of Major Raines, 95th Regiment. The Force marched through Cutch and Guzerat to Deesa, arriving there on the 27th December.

It left Deesa, *en-route* for Nusseerabad, on the 3rd January 1858, but was halted at Muddar for three days, whilst a detachment, consisting of one Company of H. M.'s 95th Regiment, 2 Guns, Bombay Artillery, and 3 Companies, 10th Bombay Native Infantry, under Captain MacGowan with Lieutenants Roome, Burd and Durand, proceeded to attack the rebel stronghold of "Rowah," which Major Raines had received orders to destroy.

The detachment, on the morning of the 6th of January, formed up in front of the walls of "Rowah," which was found to be strongly fortified and garrisoned by about one thousand men. After a few rounds from the Artillery, the assault was given by two Companies, 10th Regiment, N. I., and, although stoutly opposed, was completely successful. Captain MacGowan, who was the first man to enter the entrenchments, was severely wounded, in a hand-to-hand encounter with two of the enemy; Mr. Kelly, a volunteer with the 10th, was shot through the body, and Lieutenants Burd and Durand were slightly wounded; there were many casualties also amongst the men.

After the village had been cleared and the enemy driven up the hill, the 10th detachment was re-called by Major Raines, and a party of European sappers under Lieutenant Macquay sent in to blow up the Thackoor's Palace. Whilst engaged in this work the enemy returned, attacked, and drove them out, after severely wounding Lieutenant Macquay. The detachment 10th N. I. was then again ordered up and, under command of Lieutenant Roome, retook the village, and extending along the side of the hill, protected

the sappers until the palace had been blown up and the village destroyed. Major Raines, before returning to camp, addressed the detachment, 10th N. I., and expressed his "admiration of their gallantry and discipline and his regret at the severe wounds "of their noble leader."

Havildar Bunsee, who was one of the wounded, greatly distinguished himself and received the 3rd class Order of Merit.

Private Suddoo Surpuray, Grenadier Company, was, by Major Raines' special request, promoted to Naique for his gallantry in saving the life of Private Macquirt of the 95th, when the latter had been overpowered and nearly cut to pieces by four of the enemy.

Major Raines, after sending the wounded into Deesa, continued his march and joined the Force under Colonel Holmes, 12th N. I., that was about, for the second time, to attempt the capture of the Fort of "Awah," which was held by a large number of mutineers of the Joudhpoor Legion and other Bengal Regiments.

Batteries were erected and operations commenced on the 19th January, and all was arranged to assault on the 24th. At dawn on that day, the storming parties, including 75 men of the 10th, marched to the Breaching Battery, but the Fort was found empty, the enemy having escaped through the Cavalry Piquets, favoured by the excessive darkness and a violent thunder storm which raged throughout the night. Many guns were taken, and about a hundred and fifty prisoners. Lieutenant Roome commanded the Wing of the 10th during these operations.

The Left Wing was during this time still in Bombay, with the exception of two Companies under Captain Fearon with Lieutenant Richardes, who were detached against the Bheels in the Nassick and Peint districts.

The Right Wing, after remaining a month at Nusseerabad, was attached to the 2nd Brigade, R. F. F., part of Major-General Robert's Division destined for the siege of "Kotah." The Division arrived before "Kotah" on the 22nd March, and regular siege operations were carried on till the 30th. On the morning of that day, as the Right Wing was falling in for the assault, the Head-Quarters and Left Wing of the Regiment, which had left Bombay on the 2nd February, arrived, under command of Captain Pelly, with Lieutenant Pearce, and Lieutenant and Adjutant Reid, Ensigns James, Newport and Blowers, and Assistant-Surgeon Murray, and were put on duty to protect the Camp. Assistant-Surgeon Murray accompanied the Right Wing to the assault.

The Right Wing, under command of Lieutenant Roome, took part in the storm of the city as part of the 3rd assaulting column,

and suffered some loss in clearing the houses and temples of many rebels, who had been unable to escape and who fought desperately to the last.

On the evening of the day after the assault, the Magazines in the old rebel cantonment exploded; 1 Havildar and 3 men of Grenadier Company, 10th N. I., who were on guard close by, were blown to atoms; as were also Captains Bainbridge, 23rd N. L. I., and Bazalette, H. M.'s 95th Regiment, who happened to be present in the Magazines at the time. Sepoy Shaik Kaddur, Grenadier Company, 10th Regiment, N. I., was sentry over some tumbrils in the midst of the Magazines, portions of which continued exploding for nearly ten minutes; although the rest of the guard were killed and the nature of the stores in his charge greatly increased his danger, he never left his post, but was found by Captain Ballard, C. B., Quarter-Master General, (who galloped up on hearing the explosions) marching steadily on his beat, though covered with dust and rubbish and bruised by falling stones. Captain Ballard reported his good conduct to the Major-General commanding R. F. F., and he was awarded the 3rd class Order of Merit.

No. 3 Company, under Lieutenant Anderson, which had been left at Bhooj, was, during this month, present at the operations against "Beyt" Fort and Island. Lieutenant Anderson's Company did not land, but was distributed in boats during the attack, which was made by a Wing of the 4th King's Own Regiment and some Native Infantry, and which proved unsuccessful. On the subsequent evacuation of the fort by the enemy, Lieutenant Anderson's Company was sent to take possession of it, and held it for nearly a month, when they received orders to join Captain Fearon's detachment in Bombay.

After the siege of "Kotah" the Regiment formed part of the Rajpootana Field Brigade under Brigadier Smith, which was detached from Major-General Robert's Division for service with the Central India Field Force under Sir Hugh Rose.

The Brigade left Kotah on the 19th of April and marched through the Mokundra Pass to Jalra, Puttun and Chupra.

On the 7th of May, a portion of the Brigade, consisting of the 10th, N. I., and one Company, H. M.'s 95th Regiment, attacked and destroyed Maun Sing's stronghold of "Padoon;" about twenty prisoners were taken here and disposed of by Drum Head Court Martial.

On the 21st of May, the Brigade, now styled the 3rd Brigade, C. I. F. F., marched from Goona to attack the Fort of "Chundaree," which had been occupied by a strong body of Bundeelas, and arrived before the Fort on the 26th; the enemy kept up all day a fire of

Artillery and Musketry, but without doing any damage. On the following morning the Fort was assaulted from two directions—the 95th on one side, and the 10th on the other—but was found nearly empty; some prisoners were taken and hanged.

After leaving “Chundaree” the Brigade proceeded to join Sir Hugh Rose at “Seepree,” the Regiment was sent to disarm the town and fort, and captured a number of concealed rebels.

On the 17th June the Brigade, moving on “Gwalior,” arrived at “Kotah-ke-serai,” about five miles south of that fort, and separated from it by a wide range of hills. The rebel army, numbering several thousands under Tantia Topee and the Ranees of Jhansi, was strongly posted behind a canal and on both sides of the only pass leading through the hills. The attack was made in direct echelon of Regiments from the right, covered by two Companies of the 10th and two of the 95th. The entrenchments were carried, under a heavy fire, by the skirmishers at the double, and the enemy driven into the hills, from which they made several attempts to regain their old position, but failed. The Infantry of the Brigade were, in the meantime, told off into several detachments to storm and clear the various heights, so as to enable the Cavalry and Artillery to move through the pass; this was successfully carried out, and the Cavalry passed through and charged across the plain close under the guns of the fort, killing great numbers, including the Ranees of Jhansi, and capturing four guns.

A Company of the 10th, advancing over the hills on the extreme left, pressed the enemy so closely that Havilder Dhondjee Guicwar on the right of the line of skirmishers, by a sudden rush with a few men, captured a 6-pounder gun which they were taking away; for this he received the 3rd class Order of Merit.

The Brigade bivouacked in the middle of the pass. The piquets were attacked and firing went on all night.

On the 18th, the enemy threw shot and shell all day into camp and harassed the troops a good deal. At night they attacked the piquets of the 10th, but were repulsed with loss.

In the general action of the 19th, resulting in the capture of the town of “Gwalior,” the Regiment, under Lieutenant Roome, took a prominent part. A Battery of five guns, which was playing on the advancing troops, was charged and taken by the 10th, also the grand Arsenal, which was full of rebels; in the latter place were captured the colors of the 6th Regiment, Gwalior Contingent. Brigadier Smith, in his report of the operations of the 17th, said:—“I have only to add that I cannot speak too highly of the steady and soldierlike conduct of both officers”

"and men of the 10th N. I., and officers and men of the 95th" "Regiment, who, though exhausted from fatigue and want of" "food, stormed the heights under a burning sun and heavy" "fire."

On the 24th of June, the whole of the Central India Field Force paraded before Sir Hugh Rose. During the march past the General halted the 10th, and addressed the men, telling them that he would "report specially to the Commander-in-Chief the" "bravery and discipline shown by them during the recent actions," "and the gallantry of their commanding officer Lieutenant" "Roome."

In the beginning of July, the Brigade marched from Gwalior to Seepree.

On the 5th of August, it was suddenly ordered out, without tents or kit, and proceeded to watch the Fort of "Powrie," (which was occupied in force by the rebels under Maun Sing,) until the arrival of a siege train from Gwalior. On the 19th, the siege guns arrived and the fort was shelled for two days and nights, a breaching Battery was completed, but on the night of the 22nd the enemy effected their escape, the fort having only been partially invested.

A pursuing column was immediately organized, of which the 10th formed part, and under Lieutenant Colonel Robertson, 25th N. I., commenced following up the fugitives. For ten days it continued its march through dense jungle, halting at night and marching from sunrise to sunset. At length, when the troops were nearly done up, Colonel Robertson called for a hundred of the strongest men of each corps to make forced marches in advance of the column, and if possible, overtake the enemy. Lieutenants Roome, Durand and Blowers accompanied the 10th detachment.

This advanced force, after marching forty miles in twenty-six hours, came upon the rebels at daybreak of the 5th September, bivouacked on the opposite bank of a large river near the village of "Beejapoor," surrounded them on three sides, and completely surprising them, attacked and drove them into the river, where numbers perished. The 10th and 95th detachments crossed with them and prevented their escape on the other side. They were all accounted for, upwards of 450 dead bodies being counted on the river banks, exclusive of those who fell in the water. The killed were all sepoys of the old Bengal Army, and many wore medals. The 10th detachment, seventy strong, had three men killed, one Subadar (Ranjee Scindia), and four men wounded.

Havildar Luxmonra Ravay, Ramlall Oopadia and Sepoy Sewdeen Ahir received the Order of Merit for gallantry in this action. The

successful surprise of the rebel camp was indeed acknowledged by Colonel Robertson to be chiefly due to the zeal, fidelity, and courage displayed by Havildar Ramall Oopadia, 10th Regiment, N. I., who was employed as a spy by the Assistant Quarter-Master General.

On the 23rd September, the Brigade was again united at Goona, and during that and the following month was employed watching the different fords along the "Betwa" to prevent the escape south of Tantia Topee and Feroze Shah.

On the 30th October, Captain Fearon's detachment, consisting of Nos. 3, 8 and Light Companies, joined from Field Service against the Bheels in Peint, the rising in that part of the country having been put down and most of the principal chiefs captured and hung, together with Bhugwunt Rao, the Rajah of Peint, who had instigated them to rebel.

On the 14th of November, the Brigade, which had been following up a body of two thousand rebels under Maun Sing, came up with and surprised them near the village of "Koondrye." The attack was made in line, and the enemy, encountering first the Lancers and 95th on the right, attempted to escape by a gorge near our left, where, however, they were intercepted and charged by 8th Hussars and 10th N. I. They broke and scattered, but were shot down in every direction; it was estimated that upwards of 500 fell—our loss being only 1 officer and 11 men.

Jemader Ramlall Oopadia and Private Dunka Ahir received the 2nd and 3rd classes, respectively, of the Order of Merit for gallant conduct in this action.

Captains Coley, Pelly and MacGowan were promoted to Majors by Brevet for their services during this year.

From this time until the end of April 1859 the Brigade was constantly engaged in pursuit of the principal rebel forces under Feroze Shah and the Rao Sahib, and underwent a succession of long and harassing marches without any signal result. The enemy were hunted through Tonk and Rajpootana back to the jungles near the Sarbuttee river, where other columns took up the pursuit.

The Regiment had, during this time, furnished detachments to Bhilsa, Saugur and Nusseerabad, and No. 2 Company under Lieutenant Durand was present in January at the capture and destruction of the Fort of "Nargurh."

During the month of April the Brigade remained in the Parbuttee jungles searching them in every direction. On the 3rd the enemy attacked near "Goojaree" the baggage and sick carts in rear

of the column, charging amongst them with shouts and yells, and succeeded in killing Mr. Molta, the Band Master of the 10th, and severely wounding two men before help arrived. They were soon put to flight, however, by the rear guard, 8th Hussars and 10th N. I., who doubled up on hearing the firing. Their movements were closely and carefully watched, and they did not long escape punishment for their treacherous attack on the sick and followers. On the night of the 4th, in consequence of information received, a portion of the 8th Hussars and three Companies of the 10th, under Captain Richardes, with Lieutenants Harris and Newport, the who leunderColonel De Salis, started just after dark, and marching all night through the jungles, came upon the rebels at dawn, bivouacked near the village of "Boorda." The detachment advanced stealthily in extended order till within sixty yards of them, when, being perceived and the alarm given, they charged right in amongst them, shooting and bayoneting a great number, 300 were killed and the rest being met by a force under Colonel Rich, 71st Highlanders, lost about a hundred more of their number.

At the commencement of the month of May "Smith's Brigade" was broken up, and the different Regiments marched to cantonments, with the exception of the 10th N. I., which corps, although it had since it landed at Mandavie marched 2,600 miles, was not permitted to rest, but placed at the disposal of Brigadier-General Sir Robert Napier for the purpose of watching and patrolling the Seronge jungles, which were a favourite haunt of the rebels during the monsoons.

The following Extracts are taken from the farewell order issued on the breaking up of the Brigade:—

\* \* \* \* \*

2. "Since operations have commenced "the Regiments forming "the Brigade have been unceasingly in the Field; have marched "nearly 3,000 miles; have been engaged fourteen times with the enemy; "and have served under the Generals of four Divisions, each of whom "has called for fresh and more arduous exertion."

3. "It is not for Colonel De Salis to say how these calls have been "responded to, but he may say that it was impossible for any body "of men to have evinced more military discipline and subordination, "more zeal or untiring good will, or a better spirit whenever their "enemies were before them."

\* \* \* \* \*

6. "The 10th Regiment, N. I. alone continue in the Field, and "as, throughout this long struggle, they have been our trusty and



“hard-working comrades, taking part in our fatigues and our victories, so we must now hope they will speedily be permitted to “share our repose.”

By order,

(Signed) W. GOLDSWORTHY, ENSIGN,

*Acting Brigade Major.*

The Head-Quarters of the Regiment under command of Captain Richardes were, during this monsoon, established at Deopoor near Seronge, but four Companies were sent across the Betwa and formed the Infantry portion of the Bassoda Field Force under Lieutenant Roome of the 10th, who had orders to constantly harass the rebels on that side of the river, and, if possible, drive them out of the district.

This Force, with which were also Lieutenants Harris and Newport, was first engaged at Richia on the 16th May, when, after a long pursuit, it attacked and routed a large body of rebel Cavalry, killing forty-five of them, and severely wounding their leader The Buckshee.

Some parties of the 10th were sent out from Head-Quarters during this month under Native Officers to search for concealed rebels in Seronge and the neighbouring villages, and seized and brought into Camp upwards of a hundred.

On the 22nd of June, the Bassoda Detachment again came up with the enemy, who, tired out with the pursuit, took up a position and stood at bay near the village of “Goonapoora.” Their position was attacked and carried by the 10th, who drove them through the village into the open, where they were cut up by the Cavalry (Mayne’s Horse). Our loss was only two men wounded.

On the 3rd of August a small Force under Major Holmes, 89th Regiment, with which was a detachment of the 10th Regiment, N. I., under Captain Richardes, surprised and routed at “Wassilgurh” a body of rebels, killing many, and capturing all their baggage, tents, and horses.

On the 16th, near “Goripooree,” Lieutenant Roome’s Force was again successful in bringing the enemy under Adil Mohomed Khan to an engagement, in which they lost more than a hundred men and the whole of their baggage. This third action was decisive, the rebels finally abandoned their haunts in Bassoda and Garrispoor, and spread over the neighbouring country, where they were closely followed by Lieutenant Roome, who was able to report that there did not remain a rebel in his district.

On the 2nd September, a Rebel Chief, Chutter Seal, gave himself up to a detachment under Captain Richardes of the 10th, which had been for fifteen days steadily pursuing him. He was brought into Deopoor and forwarded to Gwalior for trial.

During the remainder of this year, the Regiment furnished several detachments which constantly patrolled the Seronge jungles, were sometimes engaged in petty skirmishes, and made many captures, more especially at "Oonarsee" and "Amneekhaira" under Lieutenant Noyes. They endured cheerfully every privation and hardship, having frequently to sleep in the open air, in all weathers, without tents or baggage.

Captain Roome, for his distinguished services, received three times the thanks and approbation of the Governor General in Council, and was made a Brevet-Major from the date of his attaining the rank of Captain.

On the 3rd January, the Regiment, having been relieved by the Bareilly Levy, left Deopoor for its own Presidency.  
A. D. 1860.

On this occasion, the following order was issued by Lieutenant Colonel Boyle, H. M.'s 89th Regiment, commanding Seronge Field Force :—

"Lieutenant-Colonel Boyle, commanding Seronge Field Force, congratulates the officers and men of the 10th Regiment, Bombay N. I., on the prospect of their return to their own Presidency after an absence of two years, during which they have cheerfully undergone much fatigue and exposure, and rendered good and gallant service against the enemies of the State, thereby obtaining the marked approval of His Excellency the Commander-in-Chief in India."

The Regiment marched under command of Major Gell *via* Sehere, Mhow and Ahmednuggur, and arrived at Kolapore on the 13th March.

The following Extracts are taken from General Orders by the Commander-in-Chief in India and Bombay on the occasion of the Troops of Madras and Bombay quitting the Bengal Presidency :—

*General Order by the Right Hon'ble the Commander-in-Chief, dated Head-Quarter, Camp Agra, 28th November 1859.*

"The Madras and Bombay Troops that have been recently occupying stations in the Saugor and Bundelcund Territories, and the Gwalior Divisions, will shortly return to their own Presidencies."

2. "Lorde Clyde cannot permit them to quit Bengal without expressing his thanks for the useful service they have rendered during the past two years."

10. "The 10th Native Infantry saw much service, and was distinguished particularly when forming part of the column under Brigadier Smith."

*General Order by His Excellency the Commander-in-Chief, dated Adjutant General's Office, Bombay, 4th February 1860.*

148. "The Commander-in-Chief learns, with much satisfaction, that the Regiments and Detachments of this Army, as shown in the margin, lately serving in Central India, are on their return to cantonments within Presidency limits, after a career of honourable and faithful service to the State, which has been cordially acknowledged by His Lordship the Commander-in-Chief in India, in General Order issued to the Army, under date the 28th November last."

|                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3rd Regiment Light Cavalry, }<br>Head Quarters and Right wing. }<br>2nd and 5th Companies Sappers<br>9th Regiment, N. I. [and miners.<br>10th Regiment, N. I.<br>24th Regiment, N. I. | "that the Regiments and Detachments of<br>"this Army, as shown in the margin, lately<br>"serving in Central India, are on their re-<br>"turn to cantonments within Presidency<br>"limits, after a career of honourable and<br>"faithful service to the State, which has<br>"been cordially acknowledged by His Lordship the Commander-in-Chief<br>"in India, in General Order issued to the Army, under date the<br>"28th November last." |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

"The 10th Regiment, N. I., has had more extended and active employment which has been fully detailed in the several despatches of the Commanders under whom it has served, in their frequent encounters with the revolted sepoys and rebels in Guzerat, Rajpootana, Central India, and more especially at Gwalior."

"The Commander-in-Chief has thus prominently alluded to the services of these Native Corps, because, throughout the period in which they have been performed, no single instance has been submitted to Head-Quarters of misconduct, disloyalty, or complaint, while, on the other hand, it has afforded His Excellency the highest satisfaction to peruse the frequent accounts of their long and well-tried fidelity and courage."

In June of this year the strength of the Regiment was reduced to 800 Privates.

In November the strength was further reduced to 8 Companies and 656 Privates.

In General Orders by the Governor General of India, dated 7th December, Jemadars Dhondjee Guicwar and Luxeemon Rao Ranay, Color Havildar Bunsee, Naik Shaik Kaddur and Private Dunka Ahir of the 10th were admitted to the 3rd class Order of Merit, in consideration of their distinguished "gallantry in the Field."

A. D. 1861. Stationed at Kolapore under Major Gell.

In January, the strength was reduced to 600 Privates. Serjeant Major John Payne was in General Orders of the 23rd July awarded a silver medal with an annuity of £20 as a reward for distinguished service during the campaign.

1862. Stationed at Kolapore under Major Gell.

In December of this year, the Regiment was moved to Poona.

1863. Stationed at Poona under the command of Lieutenant-Colonel Gell.

Indian mutiny medals with clasps for Central India were presented to the Regiment in July of this year by Major-General Smith, C. B.

The Regiment built new Lines at Poona during this year.

On the 16th June, the Regiment was presented with new colors at a general parade of the Poona Brigade, by Mrs. Gell, wife of the commanding officer. Major-General Smith, C. B., commanding the Poona Division, made the following speech on the occasion :—

“It gives me great pleasure to superintend the presentation of these colors to the 10th Regiment, N. I., because we were comrades during the late campaign. During a period of more than twelve months this Regiment served in the Brigade which I commanded, and was ever conspicuous for loyalty and devotion, for the soldierlike bearing of both officers and men, for gallantry in the field, and for cheerful endurance of great hardships and privations. If it should happen that I am again sent on active service, there is no Regiment which it would give me greater pride and pleasure to have under my command than the 10th Regiment, N. I. Here are your new colors, given you by Her Majesty the Queen, and presented by one selected for that office by the unanimous wish of the officers, European and Native. When the time comes for them to be unfurled before the enemy, I am sure that, like the old ones, whose torn and tattered remnants have just been marched away, they will always be foremost in the fight. I well know, from personal experience, the feeling that pervades all ranks; and am certain that there is not a single man in the Regiment who will not gladly lay down his life for these colors. You will always have my best wishes for your good luck and prosperity, and I wish you to understand, that in the encomium I have passed upon the Regiment, I have not said one word more than it deserves, or than I really mean.”

On the reorganization of the army in this year the Regiment was placed on the new or Irregular Footing, the number of officer's being reduced to one commandant, one second in command,

One Wing Officer, one Adjutant, one Quarter-Master, two Wing Subalterns, and one Surgeon.

A. D. 1864.                      Stationed at Poona under the command of Lieutenant-Colonel Gell.

In January of this year, the words "Central India" were embroidered on the colors of the Regiment in accordance with Her Majesty's commands published in G. G. O. No. 28 of 25th January.

In G. G. O. No. 123, dated 10th March, Jemadar Ramlall Oopadia was promoted to the second class Order of Merit, for "conspicuous gallantry on various occasions during the Central India campaign."

1865.                      Stationed at Poona under the command of Lieutenant-Colonel Gell.

1866.                      Stationed at Poona under the command of Lieutenant-Colonel Field.

1867.                      Stationed at Poona under the command of Lieutenant-Colonel Field.

In July and September of this year, respectively, Prize-money for "Kotah" and "Jhansie" was paid to the Regiment.

In the latter part of this year an Expeditionary Force was organized, under command of Sir Robert Napier, G. C. B., Commander-in-Chief of the Bombay Army, for the purpose of liberating the Consul, Captain Cameron, and other subjects of the Queen of England, who had been for years imprisoned by Theodore, King of Abyssinia.

An Advance Brigade, of which the 10th N. I. formed the Infantry portion, was despatched from Bombay at the beginning of October for the purpose of preparing the way for landing and passage of the Army from the coast to the highlands, establishing a firm footing in the country, and opening negotiations for supplies and assistance with the Native States near the intended line of march.

Sir Robert Napier addressed the Regiment before its embarkation, and said that "he had selected it out of the whole Army to lead the Advance, from the high opinion he had formed of its conduct and discipline during the time it had been under his command at Poona."

The following officers proceeded to Abyssinia with the Regiment;—Colonel Field, Majors James and Pierce, Captains Burd and Durand, Lieutenants Blowers and Goode, Surgeon-Major Murray and Assistant-Surgeon Laing, M. D.

F

The Advance Brigade, which was commanded by Colonel Field, with Captain Durand as Staff Officer in addition to their regimental duties, left Bombay on the 7th October, and arrived at Zoolla in Annesley Bay on the coast of the Red Sea on the 21st October. All the stores, tents, baggage, &c., were carried to the shore by the men under very great difficulties. This was effected in a few days, and the Regiment marched twelve miles to Koomaylee, at the foot of the hills, to commence the work of cutting and making a road to the highlands.

This was no light task. At a distance of about twelve miles from the shore appeared a barrier of lofty mountains rising one above the other for a distance of sixty miles, terminating in the Senafe plateau, 7,000 feet above the sea. The narrow defiles, which afforded the only means of reaching the latter, were covered with thick jungle and blocked with huge stones and boulders.

The work was commenced by the Left Wing and continued by the Head-Quarters and Right Wing at Koomaylee, and the sappers in the Sooroo Defile, 10 miles further up the pass. The Left Wing, under Major James, was then pushed on in advance to Lower Sooroo, with the mountain train, and on the 12th November to Upper Sooroo, higher up the pass, where it was employed in making roads and reservoirs, clearing encamping-ground for troops and stores, and a large place for the formation of a depot.

All hands vied with each other in their endeavours to further this object, and worked, notwithstanding the heat (108° in the shade), with admirable zeal and cheerfulness. The Right Wing working parties, under Major Pierce, Captain Durand and Lieutenant Blowers, besides clearing encamping-grounds for four Regiments, cut and levelled, in twenty days, more than nine miles of good carriage road fifteen feet wide, which Colonel Phayre, Quarter-Master General, reported to Government had been done in excellent style and "with a rapidity which was as "astonishing as the results were satisfactory."

In consequence of this rapid progress and that of the sappers and Left Wing at Sooroo, the Brigade was soon enabled to advance up the pass and arrived at Rayray Guddy, nine miles from Senafe, on the 2nd December. There it bivouacked in a narrow ravine for three days without being able to pitch tents; the temperature here was at night below freezing point.

During this time the road was opened to the head of the pass by the sappers and men of the 10th under Major Pierce and Captain Burd, and a thick jungle cleared for a Camp at Rayray Guddy by the Left Wing. On the 6th December, the Advance Brigade reached the plateau and marched into Senafe, accompanied by some friendly chiefs with their followers, who had come out to meet the Troops.

The Regiment remained at Senafe until the end of January 1868, where it was employed in clearing jungle, laying out an extensive camp, making roads, digging wells, &c. Huts for more than 1,000 muleteers were also constructed by working-parties of the 10th under Major Pierce, Captain Burd and Lieutenant Blowers.

Two Companies of the Right Wing, under Major Pierce, left Senafe on the 17th January, with a Pioneer detachment, which was ordered to open the road to Addigerat.

The Head-Quarters of the Regiment, with the remaining Companies of the Right Wing, also marched from Senafe on the 31st January. The Left Wing, under Major James, continued to garrison that place.

The Head-Quarters arrived at Addigerat on the 2nd February, and halted there until the arrival of His Excellency the Commander-in-Chief, with the remainder of the 1st Brigade. One column, preceded by a Pioneer detachment, in which were two Companies of the 10th, under Major Pierce, was then pushed on to Antalo, the remainder following with the Head-Quarters Camp on the 18th February.

After arrival at Antalo the Force was organized in Divisions and Brigades, and the 10th was placed in the 1st Brigade, 1st Division.

A Pioneer Force, to open the road towards Magdala, was also formed under the command of Colonel Field, who was appointed Brigadier-General, with the Adjutant of the Regiment, Captain Durand, as his Brigade-Major.

In consequence of this, the command of the Regiment devolved upon Major James, who joined Head-Quarters at Antalo, leaving the Left Wing under command of Major Burd.

On the 22nd March at Lat, a new disposition of the Force was made, the Pioneer Force being incorporated into the other Brigades, and a 3rd Brigade formed under the command of Brigadier-General Field.

Major James joined the 3rd Brigade at Lat with the Head-Quarters of the Regiment, the men of which, having become nearly exhausted with their labours in making the road all the way from Senafe to Antalo, (110 miles) had been allowed a short rest at the latter place.

On reaching Santara on the Wadela plateau, south of the Tacazze river, the three Brigades were again united and a re-distribution of the Troops took place. The 3rd Brigade was amalgamated with the 1st and 2nd; consequently Colonel Field and Captain Durand re-joined the Regiment in the 2nd Brigade under General Wilby.

From this place, the whole of the 1st Division marched without private baggage of any kind, each soldier and sepoy being only allowed to carry one waterproof sheet and one blanket, besides a great coat, the officers being also allowed only a waterproof sheet and two blankets; 20 men or 12 officers were allotted to each Bell Tent, and, with carriage thus reduced to the lowest extent, the Force pushed on towards Magdala. The cold in this region, 10,500 feet above the sea, was intense, and the men suffered severely from that cause and from the great scarcity of fire-wood and provisions suitable for Hindoos. The country produced next to nothing and they had to subsist for days upon raw wheat and bad meat, without ghee, dhall, or salt. Notwithstanding this, they kept in good health and spirits, and performed cheerfully and efficiently all the harder work in the 2nd Brigade, in which they were the only native Troops.

On the 6th of April, the Dalanta plain was reached, from which Theodore's stronghold of Magdala, 10 miles distant across the Bashilo, was plainly visible. Here the Division halted, whilst a reconnaissance was made and supplies brought up from the rear.

On the morning of the 10th, the two Brigades crossed the Bashilo, at an interval of four hours, the first Brigade leading. Two detachments of the 10th, under Subadar Ram Swamey and Jemadar Shaik Hoosain, respectively, were with the 1st Brigade, one as a Guard to the Engineer Park, and the other to the Rocket Battery of the Naval Brigade.

The 1st Brigade, after crossing, advanced to take up a position for the encampment; the 2nd Brigade remaining in the river bed to await orders.

In the evening the sound of Artillery and volleys of musketry showed that the 1st Brigade was engaged with the enemy. The 2nd Brigade was then held in readiness, and only awaited the order to advance, which, however, came too late for them to take any part in the defeat of Theodore's army that day. The two Native Officers' parties, mentioned above as being with the 1st Brigade, were actively engaged, and did good service in the part of the Field where they were stationed.

The Troops were formed up before daybreak next morning, when it was expected Theodore would resume the action, but the previous day's slaughter caused him to sue for terms, and during the course of the two next days (11th and 12th April) he sent all the European Captives into the British Camp.

He, however, positively refused to surrender either himself or his fort, and, finding Sir Robert Napier inexorable on this point, prepared to die in its defence.



On the morning of Easter Monday, the 13th April, the two Brigades advanced to the assault, the 2nd Brigade leading. The 10th N. I. occupied, without opposition, the hill of Fahla, and was afterwards moved to Islamgie, which it held during the assault. After four hours bombardment the fort was stormed by the 33rd Regiment. Theodore, backed by some chiefs and followers, the sole remnant of his enormous army, which had remained faithful to him, fought to the last and died in the gateway by his own hand.

The next day, the 10th Regiment occupied the Fort of Magdala, and held it till it was committed to the flames on the 16th April.

With Theodore's death was accomplished the last object of the expedition, and preparations were immediately made for a return to the east with the released captives.

After three days spent in collecting prize property and bursting the captured guns, forty in number, the Force commenced its return march.

On the Dalanta plain, where a halt took place, the Commander-in-Chief held a grand parade of the whole Division, when the released captives were shown to the Troops, and a General Order read out, expatiating upon the success which had crowned the efforts of the Force and eulogising the zealous exertions which had been made by all ranks towards that end.

The march home was daily prosecuted without halts, it being of great importance to get out of the mountainous region before the setting in of the rains. The Regiment reached Antalo on the 9th May, and Senafe, on the 23rd. On the 24th, it continued its march down the pass, with the released captives in charge, arriving at Zoolla on the 28th, when it immediately embarked on board the Transport Steamer *American* which sailed for Bombay two days afterwards.

The Left Wing had previously marched from Senafe to the coast, and embarked for Bombay in two detachments on the 13th and 17th May under Majors Burd and James.

Both Wings reached Bombay about the middle of June; the Right Wing on landing proceeded by rail to Malligaum, and arrived at that Station on the 18th, the Left Wing remaining at Tanna under command of Major James for garrison duty.

For their services in Abyssinia Colonel Field was nominated a Companion of the Bath, and Aide-de-Camp to the Queen, and Major James promoted to Lieutenant-Colonel by Brevet.

Major Pierce was honorably mentioned in Lord Napier's Despatches.

At the close of this campaign Enfield Rifles were issued to the Regiment, their smooth bore muskets having been handed over as a present to Kassai, Prince of Tigre, in Abyssinia.

A. D. 1869.                      Stationed at Malligaum under Lieutenant-Colonel James.

In this year a medal was granted by Her Majesty to all Troops employed in the Abyssinian Campaign.

In 1870, the Regiment was made a Light Infantry Corps by command of "Her Majesty the Queen, in consideration of the excellent services it performed during the Abyssinian Expedition."

MALLIGAUM; }  
22nd Sept. 1871. }

J. FIELD, COL., C. B.,  
Comdg. 10th Regt., N. L. I.

## III

## Note on General Chanzy's Campaign of the 2nd Army of the Loire.

---

IN his history of the operations of the 2nd Army of the Loire, which with the notes covers nearly 700 pages, General Chanzy commences with a description of the preliminary operations of the army of the south under General D'Aurelles de Paladine, in which he took part as commander of the 16th Corps d'Armee. He describes the advance on Orleans and the evacuation of that town by the Germans. He relates how the Germans came back, reinforced, drove the Right Wing of the French across the Loire, and their Left Wing along the right bank of the river, and re-captured the city.

The French Ministry at this time (5th December) resolved on forming two separate armies of the forces on the north and south banks of the Loire. The 1st Army of the Loire, formed to the south, consisted of three Corps d'Armees, and was placed under command of General Bourbaki; it subsequently operated in the east of France. The 2nd Army of the Loire, composed of three Corps d'Armees which had remained on the north bank of the Loire after the defeat by the Germans, was placed under command of General Chanzy, who took up a defensive position with his Right resting on the Loire at Beaugency, and his Left on the forest of Manchenoir, in front of the town of Josnes.

From this position the French were driven, and they retired to Vendome and the line of the river Loire. Again compelled to retreat, Chanzy retired upon Le Mans, and took up a strong position in front of that town; here he hoped to be able to hold his own against the attacks of the Germans, and subsequently to take a vigorous initiative when they commenced their retreat. The Germans attacked the position and were resisted at all points, but in the evening a panic seized the Right Wing, the troops broke their ranks, and fled, abandoning their positions, and Chanzy was again compelled to retreat, with immense loss in men and stores, to Laval and the line of the river Mayenne. He was here engaged in attempting to reorganize his army as rapidly as possible for a despairing effort to relieve Pairs, when the armistice and the surrender of the city stopped all further operations.

Without attempting to enter into details of the operations, a rough summary of some of General Chanzy's orders and instructions for the disposition of his troops may prove of interest. Possibly the two most striking points in General Chanzy's orders are, the care he takes

to inform his subordinates of the precise position of affairs, and of his intentions ; and, secondly, his constantly urging them to assume a bold initiative ; he occasionally blames them for want of dash or over-hasty retreat, but in no one case for rashness.

*Infantry.*—In line of columns at deploying interval—in one line—  
Order of march of the French Army advancing upon Orleans. covered by two lines of skirmishers ; the first line 1,300 yards in front, the second line 650 yards, and the skirmishers reserves in line with the Battalions. \*Cavalry skirmishers between five and six hundred yards in advance of the Infantry skirmishers.  
\* A Squadron of Cavalry was attached to each Division.

*Artillery.*—Two Batteries of each Division at favorable points in the intervals between Battalions, the third Battery in reserve in rear.

*Baggage.*—Divisional Baggage about five miles in rear.

*Bivouac.*—In column, by divisions, protected by grand guards 1,200 yards in front, with out-posts 600 yards in advance, and Cavalry Videttes on all the roads.

Chanzy's orders to 16th Corps in case of attack while on the march. If attacked while on the march, the even Battalions will deploy at once, odd Battalions will halt until the others have advanced some 550 yards, then advance in column as a second line.

Divisional commanders will avoid engaging more men than necessary, and economize ammunition.

The Artillery, if favorable positions offer themselves, may be pushed in front of the line. It must be supported by a sufficient force, so placed as to be out of the way of fire. The Battery will attack, and, if possible, under cover.

On arrival at the Bivouac, General Officers commanding Divisions will send to the Head-Quarters of the Corps d'Armee two mounted orderlies well acquainted with the roads.

The General Officer commanding the Cavalry is directed to fix upon rallying points for concentration in case of an alarm. It is stated in orders where will be the Head-Quarters of the Corps d'Armee, also the Head-Quarters of each division.  
Summary of orders issued by Chanzy to the 16th Corps d'Armee taking up a defensive position to cover Orleans.

The position of each Brigade denoted and (where the Brigade is not massed) the posts of the different Battalions and detached Companies.

Prescribed where will be posted the ambulance, baggage, and Reserve Artillery—both divisional and Corps d'Armee. Commander of Artillery directed to fix upon suitable spots for guns along the front and to report.

Engineers ordered to construct defences at fixed points.

Out-posts directed to intrench their posts and general instructions given for the line of out-posts.

A summary of the positions of the Corps d'Armee on the right flank published. Chanzy's Corps formed the left of the Army.

The corps consisted of three divisions, one of which was kept in reserve.

If the enemy attacks in force, the out-posts, after holding out as long as possible, will retire. Forward movements will be made from the main body to protect the retreat of the out-posts.

The routes by which the out-posts should retreat are denoted.

The Cavalry directed to concentrate; to retire if annoyed by Artillery fire, but to keep in such a position as to be at hand to protect the exposed flank of the Corps d'Armee, and to keep out of sight of the enemy if possible. The post of its ambulance laid down.

Orders for concentration of Divisions and Brigades and the positions they are to occupy.

Commanders of Divisions directed, as soon as the out-posts have retired, to move off their convoys, ambulance and baggage, by roads which have been decided on beforehand, to certain points which are laid down.

It is stated at which point the Commander of the Corps d'Armee will be found in the event of an attack by the enemy.

Posts of Reserve Artillery, ambulance, baggage, &c., laid down.

Generals of Divisions instructed how to act if compelled to retire from the positions they occupy. They are enjoined to have the roads by which their baggage will move reconnoitered beforehand, and to make all arrangements for baggage guard and police.

The hour at which Divisions are to march, and where to halt, and the roads by which their baggage is to move are denoted; also their order of march, and position of Head-Quarters of Divisions and of the Corps d'Armee, and where the Commander of the Corps will be found during march.

The reserve is directed to march about one and a quarter mile in rear.

On arrival at the Bivouac, out-posts are to be posted and reconnaissances sent out, which are not to return until the whole Division is established in its Bivouac.

Divisions formed in two lines—First line deployed on the crests of the hills covered by skirmishers; batteries in the intervals between battalions at suitable points.

Formation for a retreat to the intrenched lines in front of Orleans.

Half the battalions of each Brigade 1,000 yards in rear in column, as far as possible under cover, forming with the remainder of the Artillery a second line.

All convoys and wheeled-transport ordered to be placed on the roads by which they are to retire at day-break. Reconnaissances to be sent well forward. Tents ordered to be struck and men to remain under arms until the reconnaissances come in, and it appears certain that no attack was to be expected.

In the retreat, the baggage to proceed the army by at least three leagues. Divisions ordered to march in one line of Battalions in column at deploying intervals, covered by skirmishers at 1,200 yards distance at least, Artillery in the intervals. Divisions so to regulate their march as to be prepared to support one another. On arrival at their destination, the troops to construct epaulements for guns and shelter trenches.

The Cavalry will have advanced posts about one and a quarter mile in advance, and every morning will send out patrols to a distance of at least six to nine miles to beat the country in the front.

These patrols will usually consist of one "peloton," which will advance half the distance; then halt and send on small bodies in various directions. The information gleaned will be at once forwarded to Generals of Divisions who will report to Head-Quarters.

Grand guards under tents. Advanced posts bivouacked without tents or fires.

The cantonments to be so arranged that when the troops take up their positions they may be formed in two lines, at least 1,100 yards apart, with connecting posts. Strong reserves and a double line of skirmishers in front of all.

Batteries in position to be protected by detachments of Infantry placed behind works constructed a little in front of the epaulements, to the right and left; and so placed as not to be liable to suffer from the fire aimed at the Battery.

No troops ever to be placed behind a Battery.

With the exception of the out-posts the Cavalry will be so placed as to be under cover and not exposed to the enemy's fire.

Commanders of Corps d'Armee directed to organize constant communication with Head-Quarters by relays of mounted orderlies.

If a battery or a reserve of Artillery has occasion to retire, it will do so at a leisurely pace; if the retreat is effected at a rapid pace, it is liable to confuse and trouble the Infantry, who do not understand the object of the movement. The same applies to the movements of Cavalry.

The retreat will be conducted, as far as possible, in echelon, and in such a manner that Battalions can deploy promptly, and divisional Artillery rapidly take up good positions. If threatened by the enemy the retreat will be leisurely in the extreme, and only hastened if unmolested in order to get the men to their bivouac as early as possible. The ambulance and all wheeled-transport will start two hours before the Divisions.

There should always be, in a retreat, a line of Cavalry skirmishers behind the Infantry skirmishers, to make head against the Uhlans.

Captain N—is punished with fifteen days arrest for allowing his men to place their arms in the waggons, when a Baggage Guard.

The advanced posts were about a mile and a half in front. All along the front small posts were established to furnish skirmishers to occupy the woods and to line the hedges. Advanced posts of Cavalry, six to nine miles in front of the position. The troops cantoned behind the positions they were required to defend. Villages, farmhouses, &c., being used for shelter. Wherever bivouacked dry ground selected.

The time of Commanders in fully taken up with military measures and precautions, it is the duty of the Intendence. General Chanzy's order. Intendence to provide provisions and cause them to be carried to the rear of the position of each Corps \* \* \* \* This is a most important duty, to the performance of which the greatest attention must be paid, so that soldiers, who have to fight, may not be called on to do work they cannot execute without quitting positions which they should on no account whatever abandon.

General Gouffroy will form a moveable column with his Division selecting the most efficient men and leaving all the sick and weakly men behind. Two hundred light Cavalry will accompany the column. He will take with him his three Divisional Batteries and two mitrailleuses. The men will start with three days' rations. General Gouffroy's duty is to explore the country between the Seine and the Loire. He will push his reconnaissances as far as possible to the front, manœuvring so as not to be put off from his base, and will have Cavalry posts echelloned in his rear. He will keep constantly in communication with the Commander-in-Chief.

Runaways will be brought back and placed in the first line of skirmishers, if they then attempt to make off they will be shot.

The men will be supplied before starting with two days' provisions to be carried in their haversacks as a reserve, and which they are not to touch without orders; and with two days' provisions for consumption, which will be renewed by daily issues.

The main body of the Cavalry of each Corps d'Armee directed to proceed one march ahead, on the roads by which the Corps would retire, with orders to capture and send back stragglers, and to reconnoitre the cantonments.

Retreat from Le Mans through an enclosed country.

The remainder to cover the retreat.

Each Corps d'Armee to have one Division as a rear guard, to be supplied with tools in order to break up the roads under the superintendence of the Engineers.

When the Prussians got into Le Mans they made straight for the Railway Station, and succeeded in capturing stores and mitrailleuses before they could be carried off.

Point to seize on capturing a town.

Organize every where local defence. Compel the enemy to scatter, and make it necessary that Germany should keep in France an army of at least 500,000 men, which she can only do by keeping under arms her Landwehr and last reserves. Avoid large engagements until our organization is more solid.

Summary of General Chanzy's plan for continuing the war after the fall of Paris.

Defend the country foot by foot, and bring the people to understand that to save its honor and integrity material interests must be sacrificed, and resistance offered a l'outrance. My conviction then was, and it has not since altered, that if the country determined to defend itself it still was in a position to continue the struggle ; but it was necessary in making this resolve to face boldly all the sacrifices it would involve.

The causes of our defeat are to be found at the commencement of the war in the weakness and insufficiency of our military organization, which, partly through ignorance, partly through blindness and passion, had been permitted of late days to fall behind the age, added to the lamentable want of "ensemble" in all our strategical combinations. But with us who later on found, in our improvised soldiers, all those martial qualities which always have existed in the French Nation, with us, the chief cause of failure has been lack of confidence in ourselves.

Opinion as to the cause of defeat.

At the same time let us beware of drawing inference from this that improvised armies should be relied on in the struggles that may still be in store for us. The events I have recorded shew irrefutably, that a Nation is only really strong and sure of its independence when its military organization is solid, complete and powerful. All European Nations are altering their military organization. Let us do likewise at once. Let us break with the systems and traditions of the past—worthy of every respect they doubtless are, as to them our country owes her greatness and her glory, but they are not adapted to the present day where everything has been fatally changed.

Necessity of thorough organization.



## SELECTIONS.

## I.

**The Wellington Despatches.\***

THE publication of the later parts of this collection having been delayed, the Duke of Wellington has re-examined the papers of his illustrious father, and the result appears in the present volume, which is an Appendix to the Supplementary Despatches from 1794 to 1812. Though a work of this kind too often reminds you of the poverty of a second harvest, or of the nauseousness of the *crambe repetita*, it may be truly said that this compilation, from its associations and its intrinsic merit, was fully entitled to see the light, and is hardly inferior to some of its predecessors. Containing as it does a number of documents from the pen of the Duke and his subordinates, especially a collection of Orders and Minutes in the possession of late the Sir George Murray, it throws fresh light on the career of Wellington in India and the Spanish Peninsula, and it not only confirms the verdict which history has pronounced on the Scipio of England, but adds something to our knowledge about the Indian administration of Lord Wellesley, the Portuguese and Spanish Campaigns of 1808-9-10-11, and the succession of remarkable operations in which the genius of a single man defied and baffled, in a nook of Europe, the gigantic power which bestrode the Continent, and threatened it with complete subjugation. The most instructive part of this volume, however, is, perhaps, a mass of intercepted correspondence of Napoleon, Massena, and other French generals, which illustrates curiously, from the French side, the character of the Peninsular contest, and reveals strikingly some of the causes of that catastrophe of imperial ambition. These papers reveal in the clearest manner the illusions of Napoleon about the war, and the errors of his orders given from a distance, the difficulties which beset the French Commanders, the falsehoods of their vain-glorious reports, their squabbles with each other and mutual jealousies, and the variety of circumstances which paralyzed the strength and impaired the worth of the French armies. Above all, through the contrast which they present to the attitude and conduct of the British Chief, and to his mode of carrying on the struggle, they afford unconsciously the strongest testimony to the prescience and sagacity of Wellington, to the wisdom and soundness of his calculations, and to the causes which gave him victory, inferior as were his troops in numbers.

---

\* *Supplementary Despatches, Correspondence, and Memoranda of Field-Marshal Arthur Duke of Wellington, K. G.* Edited by his son the Duke of Wellington, K. G. Vol. 13, appendix. 1794 to 1812. London. Murray. 1871.

One of the first papers in this Volume is the following letter from Lord Wellesley, which shows how little the great pro-consul anticipated in 1796 the career opening for his brother and himself. One of the chief founders of an empire in the East regrets the departure of the kinsman who had extended the family-interest in an obscure borough of the Irish Parliament, and who was soon to place the family-name in the foremost rank of the worthies of England :—

“ My dear brother Arthur is now at Portsmouth waiting for a wind for India. The station is so highly advantageous to him that I could not advise him to decline it, but I shall feel his loss in a variety of ways most bitterly, and in none more than the management of Trim, where, by his excellent judgment, amiable manners, admirable temper, and firmness, he has entirely restored the influence of my family,”

The career of Wellington in India extends from 1797 to 1805, and nearly coincides in point of time with the administration of his illustrious brother. During this period the power of England advanced from the Jumna to the Indus, and from the Coromandel seaboard to the Deccan ; and the ruin of the throne of Tippoo Saib, the destruction of the Mahratta Confederacy, and the alliance of the chiefs of the North, attest the splendour of the conqueror's triumphs. The share of Wellington in these events is well known ; how the young colonel of the 33d became Governor of Seringapatam, and by his wise management of the conquered district made it a centre of British influence ; how he subdued the foes who gathered against him by justice and prudence as well as valour ; and how in the crowning victory of Assaye he gave proof of the skill and vigour which made him one of the greatest of generals. These years were his apprenticeship to greatness, and prepared him for his Peninsular career ; for his Indian experience not only confirmed the self-reliance of his nature, but it showed how wonderful may be the effects of discipline and of just administration in a territory occupied by foreign troops, what a small well-ordered force can achieve against numerous ill-provided enemies, and how men of many races and tongues may be gradually formed into a real army by vigilance, care, and judicious supervision. This Volume proves in numerous passages that Wellington carried out in India what may be called the distinctive principles of his system of command and rule ; take, for instance, the following instructions, so significant of his jealous regard of private rights, one of the chief causes of his moral influence, and of the excellence of the troops committed to his care :—

“ You will give the strictest orders, and see that they are obeyed, that all departments and individuals whatever of your detachment, shall pay for the grain, forage, &c., which they may require and obtain in the country, and also that the cattle may not be suffered to graze upon the new grain.”

Take also the following, to an officer who had committed some of those acts of extortion then a matter of course in our service in India :—

"Complaints have come from every place at which the detachment of those under your command halted on its march to Seringapatam of improprieties committed by you, such as your obliging the bazaar people of the villages near which you halted to pay you certain duties and customs, and the Amildara to furnish for your use certain articles for which you never paid. . . . This conduct, the General considers, upon the whole, so repugnant to military principle and to the customs of the service, that he would have deemed it his duty to bring it before a general court-martial, only that he perceives the Right Honourable the Governor in Council has taken measures to prevent the recurrence of such practices."

The spirit of Wellington breathes in this strict order to a subordinate in India. It may be said that it is the very opposite of the spirit which animated Napoleon and his troops:—

"You will preserve the most strict discipline among the troops, and will do everything in your power to conciliate the people of the country to the British interests."

The talents of the Duke as a military administrator were soon appreciated by his superiors. As early as 1799 General Harris wrote of him thus:—

"Having had leisure since my arrival here to inspect the division of the army which has been since its formation under the orders of the Hon. Colonel Wellesley, I have much satisfaction in acquainting your Lordship that the very handsome appearance and perfect discipline of the troops do honour to themselves and to him; while the judicious and masterly arrangements in respect to supplies, which opened an abundant free market, and inspired confidence into dealers of every description, are no less creditable to Colonel Wellesley than advantageous to the public service."

This might be taken as an account on a small scale of the administration of the Peninsular Army when in its best state.

In 1805 Lord William Bentinck passed this high and deserved eulogium on the conduct of the Governor of Seringapatam:—

"The attention of the Court of Directors has been frequently drawn to the high degree of prosperity which the territories of Mysore have obtained under the British influence, and the important benefits which have been derived from the existing state of affairs. In viewing these happy consequences, I feel it to be an act of justice due to Sir Arthur Wellesley to state my entire belief that there is no cause to which they can be so immediately traced as to the judgment and talents of that officer, which have been invariably directed to every means connected with the public interest. He has left the command amidst the regret of all individuals, civil and military, European and Native."

Contrast with this the feelings engendered by Napoleon when he appeared as a conqueror; and think if there was not a moral fitness in the end that awaited the two great antagonists.

After a brief experience as Chief Secretary for Ireland, Sir Arthur Wellesley was despatched in 1808 to the theatre of his Peninsular

triumphs. At this conjuncture the power of Napoleon on the Continent seemed to defy resistance ; his enormous armies had struck down the forces of Austria, Prussia, and Russia, and though the capitulation of Baylen, and the efforts of the insurrection in Spain, had inflicted a real affront to his pride, few persons in Europe believed that his vast domination could be curtailed. Yet, as is well known, the Duke even now perceived the weakness of that towering despotism, and with true genius had thought out a scheme for baffling those legions reputed invincible. We see from the following, written from Corunna in July, 1808, that from the first he thoroughly appreciated the difficulties of the French in the Peninsula :—

“There is no such thing as a French party in the country, and I believe there is no man who dares to avow that he wishes well to the French cause. From all this it is very obvious to me that the French will make no progress in Spain, excepting by the aid of very large armies, and I doubt whether they will find it practicable to subsist by the means which the country can afford, or supply their magazines from France, owing to the difficulty and badness of the communication.”

Even after the terrible day of Ocana, when Napoleon believed that the final submission of Spain was merely an affair of days, the Duke wrote thus :

“If the Spaniards had not lost an army of 50,000 men, defeated by half the number of French in La Mancha, I really believe that the war in Spain and Portugal would have ended in some arrangement advantageous to the world. I do not yet despair, as it is impossible to say what may be the results of this defeat. If the troops should collect again, and they will only manage them with prudence, I hope that we may yet keep up the ball in the Peninsula sufficiently long to tire out Bonaparte.”

Vimiera was fought, and, as is well known, the army of Junot might have been destroyed, although, when the opportunity was lost, the Duke approved the Convention of Cintra. We quote the following from an eye-witness :—

“Sir Hew Dalrymple, Sir Harry Burrard, and Sir Arthur Wellesley were the persons with whom the discussion of the terms took place. Among these three Sir Arthur took the greatest share, if not the entire lead, in the conversation, which his having had the command till two days before gave him some right to do, and which is natural to the eagerness of his temper.”

The campaign of 1809 was marked by the battle of Talavera, and by that march into the valley of the Tagus which seems to have impressed Napoleon with contempt of Wellington as a strategist. This volume contains a boasting account by Jourdan and Joseph of the action ; but the Emperor was not undeceived, and has pointed out in a masterly paper the palpable errors of his Marshals. This campaign made Wellington resolve to trust no longer to his Spanish allies, and to confine his operations to the defence of Portugal : and in the winter of 1809-10 the memorable Lines of Torres Vedras were quickly and

secretly constructed, while the country in front was turned into a desert, and the Portuguese Militia were drilled and gradually formed into real soldiers. Behind this barrier, slowly maturing the resources which were to yield victory, the Duke awaited the attack of his foe; and if we recollect what, at this time, were the power and resources of the French armies, and what the Councils of the Cabinet at Home, it may be affirmed that greater foresight and constancy were never displayed in war. Meantime, in the operation of the French we see over-confidence and ignorance of the facts; and they were marred by that worst of all systems, erroneous directions sent from a distance. Not that the military skill of Napoleon was wanting in the orders he issued; he perfectly understood that the great object should be the destruction of the British army; and, on the suppositions on which he acted, the plans he formed sufficed for that purpose. But he had no conception, even in the summer of 1810, of the existence of the Lines of Torres Vedras, and of the real strength of Wellington's army; he entirely underrated the Spanish insurrection; and the result was that he continued the secondary expeditions to Andalusia and the East of the Peninsula, which could have no decisive effect, and that he despatched Massena against the Duke with a force wholly inadequate to his object. The following, written in September, 1810, is a mere tissue of miscalculations:—

“Prince of Essling, the Emperor orders me to send you an officer, and to obey his injunctions to attack *and overwhelm the English*. Lord Wellington has not more than 18,000 men—15,000 infantry, and the rest cavalry and artillery. General Hill has not more than 6,000 men, infantry and cavalry. His Majesty thinks it absurd that 25,000 English troops should hold 60,000 French in check.”

The general result of these misconceptions was that Napoleon failed to collect a sufficient force on the decisive point, and disseminated his armies in fruitless operations, thus violating in the most flagrant manner the principles of his own strategy. This volume contains many interesting sketches—for the most part from the French side—of the great and memorable events which ensued. We see from the following that the Duke was hopeful of the ultimate result, though when Massena began to advance he properly made preparations to embark:—

“Although the Commander of the Forces entertains the most confident hopes of the happy result of the operations of the army, still he is desirous to provide for every possible contingency, and take such measures as will insure the embarkation of the army against any fatality or accident that may arise.”

Massena, pressed by Napoleon's orders, and ignorant of the strength of his adversary and of the mighty obstacle before Lisbon, moved forward hastily with his army, and, after losing the battle of Busaco, and suffering terribly from attacks in his rear, and from the want of provisions in the country—wasted by the prescient care of Wellington, who thoroughly appreciated the weak point in the French

system of extorting supplies—he found himself stopped by the celebrated Lines. As early as the 29th of October he gave this account of his situation, a proof of the just calculations of his foe:—

“The army since its departure from Almeida has lost from 7,000 to 8,000 men. . . . We have not found a single inhabitant in the country we have gone through. It is complete desert,”

The march of French conquest was thus arrested, and Massena retreated to Santarem, where he maintained his position with the greatest skill, and displayed characteristic vigour and energy. His army, however, badly supplied, and living in a hostile and wasted country, began soon to feel the distress on which Wellington had reckoned; it gradually dwindled away, and lost its discipline and military worth, and he wrote to Paris for reinforcements. Napoleon, however, refused to believe that his lieutenant was in such straits; and he thought that sufficient relief would be given by sending a detachment to Massena's aid from the corps of Soult in Andalusia. This mistake, founded on ignorance of the facts, was one of the greatest ever made in war, for Napoleon ought to have left nothing undone to give Massena an overwhelming force, and as it was, the co-operation of Soult was hardly possible in existing circumstances. That able chief replied as follows, and though, probably, he had no desire to send troops to Massena's aid, his reasoning was, in the main, correct:—

“I cannot possibly detach troops to the Tagus without endangering them, and endangering also the Army of the South, which in that case could no longer retain Andalusia. On the Portuguese frontier there are six fortresses, and these contain 20,000 infantry and 2,500 cavalry. Were I to send a body of 10,000 men to the Tagus, it could not reach its destination, and would be surrounded.”

The consequence of these false operations was, that Massena was not reinforced; and, after suffering great privations, his army was compelled to retire from Santarem, and fell back in retreat on the frontier. Napoleon has endeavoured in vain to throw the blame on the Prince of Essling. His lieutenant, no doubt, made some mistakes, but the real causes of the failure were the precaution and skill of the British commander and the miscalculation of the Emperor himself. Massena writes thus of the state of his army at the beginning of the retreat, a striking commentary on the Napoleonic system of making war in a poor country:—

“The country where we are, and all that within five or six marches is completely exhausted. The few inhabitants who remain are compelled to live upon roots, acorns, and grass. Requisitions can scarcely find, even at a great distance, the Indian corn which is the sole food of officers and soldiers. Our meat is gone, our straw wholly consumed, and the horses are starving on scanty herbage, and perishing day by day. The clothes of the troops are worn out, and it has become so difficult to re-place their shoes that many of the soldiers wear skins on their feet.”

The opportunity foreseen and prepared had come, and Wellington emerged from the lines with an army disciplined with the greatest care and infinitely better than the French. He wrote confidently a few weeks before Massena's retreat :—

"You can have no idea what a superiority we have assumed over this once formidable army, and the confidence which we all feel that we shall yet save this country from the general wreck."

The great crisis was over—a crisis on which perhaps depended the fate of Europe for a generation—and though Massena conducted his retreat with consummate skill, his army was half ruined and demoralized. Nothing can exceed the mendacious boasting of his reports published in the volume, but the truth appears through the mass of fiction. We quote from a confidential despatch to Berthier :—

"I must tell you the truth ; the army has need of repose. . . . The enemy has only to show the heads of his columns and the officers are intimidated and say openly that the whole force of Wellington is upon them."

Massena and Ney, too, openly quarrelled ; and at last the perishing army of Portugal fell back discomfited behind the Spanish frontier. The Emperor in vain denounced Massena and Bessieres, who, he insisted, should have co-operated with his brother Marshal ; he was far more to blame himself than any of his docile lieutenants, and the following remarks by Bessieres are a striking proof how a third-rate General can, when an eye-witness, appreciate events more fully than the greatest commander who judges and orders from a distance :—

"Speak seriously about Spain ; the Emperor is being misled. \*  
\* \* Every one knows how false are our operations. Our forces are too widely disseminated ; we occupy too great an extent of country ; we waste our resources to no advantage ; we live upon illusions. Cadiz and Badajoz will consume our means ; Cadiz because it will not be taken ; Badajoz because it will require an army to keep it. We ought to concentrate our forces, maintain our magazines and hospitals at certain fixed points, and consider two-thirds of Spain as a battle field only to be won or lost by a victory."

In the spring of 1811, Massena was ordered to resume the offensive, and the result was the battle of Fuentes d'Onoro, which ultimately caused the Marshal to retreat. This is a specimen of the rodomontade common in French reports with reference to this bloody engagement :

"The right wing of the enemy was routed ; it was thrown upon the centre in confusion. The victory was wholly on our side."

Meanwhile, Marshal Soult had gained important successes in Andalusia, had taken Badajoz, and had fought the desperate battle of Albuera. These exploits are detailed at length in the Napoleonic style in this volume ; but they had no effect on the result of the campaign, though Soult wrote this after Albuera :—

"A great number of deserters from the English army come in. They all say that the English feel themselves unable to prolong the contest in Spain, and there is every reason to believe that when the reinforcements shall have arrived from Almeida the enemy will find it impossible to continue even at Lisbon."

After the failure of the campaign in Portugal Napoleon confined his operations to Spain, but, even after recent experience, he underrated the strength of his enemy. Nothing can be clearer and more able than his instructions to his different lieutenants, assuming the truth of his hypotheses; but his orders were founded on misconceptions, and terminated only in discomfiture. Yet he tacitly acknowledged even in 1811 that it had become impossible to seize Portugal and drive the English into the sea, and, accordingly, even when he was at the summit of his power, he had been foiled altogether by Wellington. We quote from a despatch to Marmont—the successor of Massena in disgrace:—

"The war in Portugal can be no longer considered as a mere expedition. We must give up the idea of marching to Lisbon in a single campaign; two may be required for that purpose."

This volume does not extend beyond the events of 1811. Our readers know what a change occurred in the Peninsula in the succeeding year, but the foundation of this had been laid before by the genius and constancy of the great man who had "deposited the independence of Europe in the citadel he had made on the verge of Portugal."



## II.

**The Soldier's Pocket Book.\***

There are two classes of books to be studied by all officers who aspire to become good soldiers and leaders of men in war. First, for education, scientific and theoretical works which will teach the art of war, including fortification, artillery, field sketching, strategy, and tactics, together with other minor but kindred subjects. All these may be studied in military schools, or at least before any great practical knowledge of soldiering has been acquired. Secondly, there is the class of handbooks containing practical information on a variety of subjects compressed into the smallest possible space, so that it may be carried into the field on active service and represent a library. Two such books stand pre-eminently forth from a crowd of competitors—*The Handbook for Field Service*, an old friend which issued from the brains and hands of a group of Artillery officers as long ago as 1854, under the editorship of Lieutenant-Colonel, now Major-General, Le-froy. It was written chiefly for Artillery officers, and contains a mass of most valuable information, some of which is out of the province of officers belonging to other branches of the army. Successive editions have been issued, and we hope that the next one will be divided into two thin volumes, one containing strictly technical artillery details, the other general information.

The second book is Sir Garnet Wolseley's *Soldier's Pocket-book*, chiefly intended for Staff officers, yet not without value for all; for there is no officer in the army who will not be better able to perform his own work if he combines with knowledge of his special duties some acquaintance with higher ones. What is called a good regimental officer may or may not turn out a good officer in the field, according as he has or has not pursued his studies beyond the barrack square. The late autumn manœuvres, restricted in their scope as they were by the necessity of the case, opened the eyes of many an officer to his own ignorance of a thousand arts and chances, each one as valuable as common drills, and all helping to fill up that most complicated of sciences the knowledge of war. If the reader imagines that we are exaggerating the amount of study required to produce a first-rate officer, let him take up the two handbooks named above and observe what a number of various accomplishments are taken for granted to exist in the minds of the men for whom such books are written. When this is thoroughly understood, let him further remember that a good soldier must be a man of courage, cool judgment, and strong physique,

\* *The Soldier's Pocket-Book for Field Service*. By Colonel Sir Garnet J. Wolseley, C.B., K.C.M.G., Assistant-Adjutant-General, Horse Guards. Second edition. Macmillan and Co., 1871.

and it will no longer appear wonderful that great, or even good, Generals are hard to find in any army after a long peace.

Sir Garnet Wolseley takes credit to himself for having by means of his book turned "the attention of officers to subjects of the highest interest in their profession." No doubt Sir Garnet Wolseley has done much for the service by the publication of the *Soldier's Pocket-Book*, but the first edition was only published in 1869, after the way had been cleared for it by many a book and many an article written in earnest faith and under great discouragement by soldiers who were determined to rouse the army to face the fact, that a higher education and more military knowledge were absolutely necessary, if they were to compete with foreign armies. Such a book would have sold but poorly ten years ago, as Colonel Wolseley may ascertain from his publishers. The fact is, there has been a growing sense of the necessity of more knowledge and a gradually developing interest in the military art. The *Soldier's Pocket-Book* came most opportunely when first published to supply a certain demand. The article supplied was of excellent quality, and the second edition is, in every way, an improvement on the first. There is but one criticism we have to make upon it. As might be expected, its maxims and advice sometimes refer rather to the condition of things which exist in the "little wars" of Great Britain than in a great European campaign. For instance, if the English army has ever again to take the field against a Continental army, either abroad or at home, it will not do to begin with marches of five or six miles a day and be satisfied with reaching 12 or 15. Most of the practical hints on campaigning, too, apply chiefly to uncivilized countries, where nothing is to be got but what the army can carry with it. But such trifles as these are hardly worth naming in comparison with the undoubted value of the book. Sir Garnet Wolseley writes with a critical freedom and boldness quite refreshing from an officer in his position. He feels, no doubt, that the best proof of confidence in an army, as in any other institution, is to believe that it will bear to be put through the fire a little. Obsolete sayings in "our drill-books" get no mercy at all from the author of the *Soldier's Pocket-book*, nor does he spare imaginary Generals who are supposed to disagree from him. In the space of a few lines we have two passages which cannot, at least, be said to err on the side of weakness of language or feebleness in attack :—

"Our drill-books require that the front ranks should charge with their left hands brought across the stomach to help the right in clutching the rifle. Now, if ever there was an infernal device by which a man could be kept from charging well, it has been so arrived at. Let them charge at the trail, and it will be ample time to clutch the rifle with both hands when they come in contact with the enemy."

"In our drill-books no mention is made of cheering, and at Aldershot most Generals will not allow it. It is absurd to practise charges in peace that could have no parallel in actual war. A ringing cheer is inseparable from charging. I do not believe it possible to get a line in action to charge in silence ; and, were it possible, the General

who would deprive himself of the moral assistance it gives the assailants must be an idiot."

These passages occur in the section on "Employment of Infantry in Action." They are good specimens of the style of the author, more vigorous than complimentary. As a rule, Sir Garnet Wolseley advocates nearly all the changes in drill and organization which have been proposed of late years by most of our best officers. Yet on some points he is curiously and fiercely conservative, propounding opinions perfectly inconsistent with his more advanced views. For instance, he approves instruction and enlightenment, demanding tactical teaching for all officers. We cannot see how enlightenment would permit such a state of things as he recommends on page 247 :—

"In conclusion, it should be instilled into the minds of every cavalry soldier that his arm of the service is invincible, and more than a match, under all circumstances, for infantry or artillery, either singly or in masses. If he thinks otherwise, the sooner he exchanges into the infantry the better. Every cavalry officer should be a fanatic upon this subject."

Great as is our respect of Sir Garnet Wolseley, we protest against his giving the support of his name to any such doctrine as this. Cavalry officers, like all others, should know what the true strength and functions of their arm are, and, like other officers also, they should be ready to do what may be evidently dangerous, nay certainly destructive, to themselves, if by a comparatively small sacrifice they can gain a great advantage to the whole army. Take the two cases of one man who is only prejudiced in favour of his own arm and of another who knows exactly what his regiment can do, but expects, as cavalry officers especially must expect, to have impossible tasks set him—impossible so far as beating the enemy is concerned—but not impossible if his object is to help his General to win battles and count his own life well lost if his country is saved. This is the spirit which must pervade an army, and it will be worth ten times more than any rashness springing from ignorance, for the ignorant and prejudiced must learn at last, by experience, and then what becomes of their motive power?

Again, we disagree from Sir Garnet when he writes in hasty language against the institution of "Special Correspondents" in war. So long as wars were made by Princes entirely for their own benefit and without regard to the national will, Colonel Wolseley's language would have been fairly applicable. But now the hearts of nations go with their armies, and the War Correspondent is their ambassador to watch events and tell as much of the truth as will not be dangerous to the General to whose Head-Quarters he is accredited. We admit that the greatest care should be taken in the selection of men for such posts, for they must have the knowledge of soldiers with the skill of diplomatists and the pens of historians. The Court of public opinion is not an easy one to serve, and it sends forth its ambassadors without giving them the protection enjoyed by the envoys of other Courts. One fact with regard to them is most suggestive. They are invariably

received with comparative readiness where all is good order and efficiency. They are rejected and vilified where there is most to conceal and be ashamed of. This is so true that a fair guess might be made as to the issue of a campaign by the comparative readiness on either side to receive War Correspondents. We are sure that Sir Garnet Wolseley, if ever he commands an English army, will have it in such order that he may welcome a certain amount of publicity. Every modern army has a regular postal service, which no General could stop for more than a few days at a time. Through that post information will certainly pass. It is for the good of the public service, and even for the General himself, that he should know who contributes the bulk of such information. The writer, if known, is bound by a sense of responsibility which is too often absent from the writers of private letters, or the grumblers who are always pestering "the papers" to take up their case or some crotchet of their own.

Among the many useful hints given by Sir Garnet Wolseley are some upon the "Intelligence Department," which, says the author, should be established by a commander as soon as his troops take the field. All Colonel Wolseley's remarks on this head are wise and practical, but we would go a step further and say "Why wait till the troops are in the field to establish an Intelligence Department?" With every respect for the military *attachés* to our Embassies, who, no doubt, do their work as well as it can be done, we can assert, from personal knowledge, that their position prevents them from acquiring much information which ought to be in the hands of the Government of England—the modern Venice. A nation which throws its whole energy into trade needs almost more than any other to be well informed on foreign politics, and on the probable result of wars even before they occur. For this purpose an Intelligence Department is necessary during peace. It should be responsible that the Government should be kept well informed, not only as to what is being done by the foreign War Offices, but as to the comparative value of their exertions. The perfect information possessed by the Prussian Government is well known to have contributed largely to their success in the late war. We have in our possession sketches of the Paris forts made by Prussian officers and others from observations made in anticipation of a war with France. The thickness of parapets, depth of ditches—all information required—was obtained and carefully collected, so that when the time came the attack could be planned without fear of error. Though England wishes for peace, not war, she will be all the safer for complete and varied information, acquired by men who must be more free than a military *attaché* can ever be, and stored up in such fashion as to be available for instant use. This is the business of an Intelligence Department during peace.

The section headed "Advice to Officers on Service as regards their Bearing towards their Men" is full of real wisdom. Sir Garnet Wolseley calls on the commissioned ranks of the Army to think more of their title of soldier than that of "officer," even though that of

"gentleman" be added to it. There are police officers and poorhouse officers, and legions of officers having no connexion whatever with the military service; the word "gentleman," too, has been strangely abused. We agree entirely with the author in preferring the title of soldier as the one to be proud of, signifying, as it must, a man trained to arms, and ready in his place and rank at any moment to lay down his life for his country—ready always to endure hardship in obedience to the same paramount duty. The following paragraph is worth more notice than its position in a handbook claims for it :—

"Whatever may be the reason of it, it is nevertheless a fact that up to the present time we have never had an English commander who succeeded in calling forth any great enthusiasm for himself or the cause in hand. We are too prone to fall down before the Great Duke, and think that everything he did was right and that his method with soldiers was the best. Without wishing for a moment to depreciate either the General or his services, let anyone read the history of his wars, and what he might have accomplished, and then picture to himself what the Duke might have done if his soldiers had had for him the feelings that the French had for their Emperor. Napoleon was, above all, a student of character and of the passions and feelings that influence men's conduct. By means of spirit-stirring proclamations, by appeals to their love of glory, and all those points upon which he knew Frenchmen to be susceptible, he was able to extract from his soldiers everything he knew that they were capable of. It is not true that Englishmen are utterly devoid of such high sentiments, but it is only special nourishment and treatment that will develop feelings so long ignored. Let any General arise who knows how to do so, and a new era of victory will be arrived at in British history. Let officers of all ranks ponder on this subject, and in their own sphere, no matter how humble that may be, let them endeavour to call out the finer and better qualities of those serving under them. No man can respond with greater alacrity than the British soldier will when an officer who understands him makes an appeal to his honour, his love of country, his loyalty, and to all those subtle, but powerful influences which alone can convert mobs into armies. 'The greatest talent of a General,' says Plutarch, 'is to secure obedience through the affection he inspires.' In fact, if you want to win battles, make yourself loved by those who serve under you."

As Assistant-Adjutant-General at the Horse Guards, Sir Garnet Wolseley will have an opportunity of impressing these right and manly opinions on the Army. Let us hope that he will find means for doing so in earnest. One of the great difficulties felt by the chiefs of the British Army is that of obtaining high-class recruits. A wise step has been taken in offering a certain number of commissions to men who have served in the ranks and compass the officer's examination. No officer can object to having such men for comrades, because they must either be men of education or extraordinary ability. Long may it be before the French system of promoting soldiers by favouritism comes

into favour in England. The new rule will have quite another effect. If to it be added the tone of officers towards their men advocated by Sir Garnet Wolseley, we may safely predict that the profession will no longer be unpopular with the respectable classes, whose service is much wanted for the benefit and credit of the country. In conclusion, we have only to recommend *The Soldier's Pocket-Book* to all ranks as a handbook full of most interesting and valuable information in a portable form.

---

## III.

**The Commentaries of Napoleon I.\***

## I.

These volumes may be described as the fulfilment of a remarkable promise, given on a solemn and great occasion, and finally redeemed under different conditions from those anticipated by their author. In bidding farewell to the old Guard at Fontainebleau in 1814, Napoleon said the memory of the past would still associate him with his soldiers, and thanked Fate that it was left to him "to recount the deeds they had done together." Before that career was yet to close, it was his destiny to add new and memorable pages to the book of History, to astonish Europe by the escape from Elba, and to succumb in hopeless ruin at Waterloo; and it was not until, Prometheus-like, he was bound to the rock of St. Helena, that he retraced the tale of his marvellous fortunes. The narratives published in this way had, strange to say, little success in France, though stamped with the mark of undoubted genius, and, as they did not bear the Emperor's name, they were not very generally read in Europe, though highly appreciated in every country by military students and writers. It was only when the general correspondence of the great warrior had seen the light that the Government of Napoleon III. appears to have entertained the notion of bringing out in a collective form these more elaborate compositions, and of adding whatever was really dictated or written by Napoleon I. on political or miscellaneous subjects during the six years of his life in exile. The complete series, under the name of the commentaries of Napoleon I., was one of the last acts of homage rendered by the Second Empire to its great forerunner, and was, doubtless, intended to confirm the dynasty in the hearts of Frenchmen, though probably after Metz and Sedan it may have a very different tendency, as it abounds in warnings as to the results of irresolute and ill-considered strategy.

These volumes contain the various accounts of some of the most famous campaigns of Napoleon, and of other passages in the Revolutionary wars, which appeared originally in the names of Gourgaud, Bertrand, Montholon, and others; they republish his estimates of the career of Turenne and of Frederick the Great, of Cæsar and other ancient commanders, and they include all his authentic "Notes," "Meditations," and "Essays," on military science, on the events which during his time occurred in Europe, and on the policy of the Republic, the Directory, and the First Empire. Taken altogether, the collection is one of peculiar interest in this age of Continental agitation and war,

---

\* *Commentaires de Napoleon I.* Paris 1870. 6 tomes.

and in many respects is of permanent value. The military papers, though often unjust, and far from trustworthy in their statements, are nevertheless of unequalled merit as illustrations of the art of war. They explain the causes of the wonderful triumphs which associated victory with the name of Bonaparte, and in a few years changed the face of Europe; and they unfold, with singular clearness and power, a series of principles, maxims, and rules to be borne in mind by the leaders of armies, and by those who would understand their exploits. As for the other writings, though less valuable, they are exceedingly characteristic, and throw a strong light on the motives and conduct of the extraordinary man whose thoughts they express; and we meet occasionally reflections in them remarkable for their brilliancy and force, and even for their prophetic insight. The book, we should add, is beautifully printed, and contains excellent maps and plans, of great use to an attentive reader.

The most striking feature of these volumes is, of course, their important military teaching; but before we briefly examine this, we would say a word as to the general manner and qualities of Napoleon as a writer, and as to his mode of handling any given subject. Those who imagine that his achievements are due wholly to intuitive genius, that his triumphs are the effect of inspiration working out its end without patient study or regard to precedent or analogy, will find in these volumes reason to see how shallow and unfounded is their theory. In all matters relating to war, Napoleon was one of the most learned of men; he seldom discusses a military problem without referring to other great commanders; he justifies his own campaigns by comparing them to those of his mightiest predecessors; he declares that the way to learn his art is "to read over and over again what has been accomplished by the best Generals." This profound, cautious, and true method, not only proves that in his case as in that of others who have attained eminence, success is never an affair simply of inborn and undeveloped gifts, it gives a peculiar value to his military writings; for it usually establishes his conclusions on the basis of broad and careful induction. When he shows that the rules he lays down are essentially identical with those observed by the masters of war in all ages, we feel that we have ascertained the truth; and his principles stand out confirmed and evident because drawn from a full examination of the facts of numerous similar instances. In politics he dogmatizes a good deal more, though he still endeavours to vindicate his acts by parallels in the reigns of illustrious rulers; but in this province, as may be supposed, he is not nearly so safe a guide, though his remarks are occasionally striking and deep, and contrast curiously with the "ideology" of the enthusiasts of the French Revolution. Another of his marked characteristics is the richness and fullness of the knowledge which he brings to bear on the matter in hand, especially in historical description, or in tracing the peculiarities of a race or a country. His accounts of the campaigns of Italy are prefaced by an admirable review of the condition of the



Peninsular States, and of their local and political divisions ; his sketch of the march into Egypt and Syria abounds in apt and learned allusions to the events which have happened in those regions ; he dwells on the fortunes of the German Empire, and speculates brilliantly on its destinies, when he tells us how he overran Germany. Yet this erudition is never pedantic, or felt to be useless or superfluous ; it is logically connected with the subject ; and it illustrates instead of burdening a narrative usually clear and copious, and enriched by ingenious and keen reflections. As regards Napoleon's mode of expression, it reveals in the very highest degree a powerful intellect and a vivid imagination. He describes rapidly and succinctly, distinguishing plainly the main outlines and principal causes of events ; and though he eschews rhetoric and mere ornament, whatever he advances is set forth with singular lucidity and force, and sometimes in the happiest manner. The turn of his sentences it has been remarked, too, displays peculiar skill in composition ; and he occasionally lights up with brilliant touches the subject, which he invariably treats with strength, simplicity, and dignity. Something foreign may, perhaps, be observed whenever he handles the more delicate and refined idiom of the French language ; but he is a great and admirable master of it when engaged on solid and grave subjects.

It is not our purpose to review the incidents of the campaigns detailed in these volumes ; we wish rather to examine the causes of Napoleon's eminence as a commander, and to consider the influence he exercised in the domain of war and military science. "Whoever" says Marmont, "makes himself a master of Napoleon's memoirs will possess a key to the rules of strategy ;" and Baron Stoffel, in a well-known passage, declares that these writings of the Emperor are a handbook in the Staff of the great army which has lately more than avenged on France the humiliations of Auerstadt and Jena. What, then, were the peculiar excellencies which distinguished Napoleon as a warrior, and have made what is called the Napoleonic system the type of modern military operations ? One of the chief was his thorough perception of the altered conditions under which war could be conducted in his age, and his adapting to them his combinations, designs, and movements. During the first half of the 18th century the modes of communication in the countries which form the military theatres of Europe were comparatively scanty and difficult ; agriculture was still exceedingly backward, and tracts were barren and waste, and the great wars of the preceding age had breasted the frontiers of most States with fortresses supposed to be impassable obstacles until reduced. In this state of things—even Frederick the Great did not essentially change the rule—campaigns were confined to manœuvres and battles around a few points, and to the attack and defence of a few positions ; the movements of armies were made to depend on the existence of immense magazines, from which only they could be supplied ; and, in consequence of the assumed necessity of besieging strong places before attempting to penetrate into an enemy's territory

the operations of war had actually become less enterprising than they had been in the days of Condé, Turenne, and Marlborough. But towards the close of the eighteenth century the great roads of Europe had improved and multiplied, the means of subsistence had increased in most countries with the advance of husbandry, the avenues into nearly every State had grown more numerous and easy of access, and hence it had become possible to make quicker and bolder movements than in a preceding generation, to support armies in a great measure on the territory they traversed, and in this way to dispense with the burden of magazines, and occasionally to disregard fortresses in a general scheme of offensive operations, their importance as barriers having diminished. Military science, however, had not comprehended what might be the consequences of these changes, and until the era of the French Revolution Generals went on in the old ways, believing that the whole end of war was to menace or cover certain points, and taking for granted that no army could move without artificial supplies, and that a line of strong places would present an impenetrable shield to an enemy. In part through genius, and in part owing to profound study and meditation, Napoleon saw that maxims like these were no longer applicable to existing facts, and from his first campaign he discovered how to derive the greatest possible advantage from the new conditions of war afforded to him. Making use of the numerous roads which every district now contained, feeding his armies on the countries they went through, and aiming straight at the central points, where he sought to overwhelm his enemy, without attaching undue importance to obstacles which might be masked or turned, he impressed a celerity on his movements and gave a boldness to his operations which for a long time completely baffled antagonists trained in an antiquated school, and made them complain that military science had been transformed by the French Revolution. This is what Jomini means by saying that Napoleon substituted invasions and marches for the old system of wars of position: and the change was complete and decisive.

It was this improvement in the method of strategy—an improvement, however, be it observed, which, according to Napoleon himself, was only an intelligent expansion of the principles of the greatest captains—that made the General of 1796-1809 appear a prodigy to Europe. What chances of success had the Beaulieus and Wurmsers, the Macks, the Melases, and the Brunswicks, the veterans of an exploded routine, against the young commander who swept over a country with the speed of a torrent, freed from impediments they thought essential and breaking through lines considered impassable, and who, as they ruefully exclaimed, always struck where he was least expected? This peculiar merit of Napoleon, however, was closely associated with another on which his triumphs largely depended,—his comprehensive and exact knowledge of the nature of the countries in which he carried on his military operations, and consequently of the true direction to be given to his general movements. This perfect mastery of the scene of a campaign—this reading, as Colonel Hamley has

called it, of the theatre of war in its various aspects—was due to a considerable extent to Napoleon's aptitude for geography, and to his intense and constant study of the map ; and it was, in part at least, an acquired faculty, as should be noticed by the military student. In this respect he was, in our judgment, without a rival in his generation ; and it was this excellence which, in a great measure, enabled him to fix on the decisive points to which his movements were to converge, or at which the enemy was to be assailed. All his campaigns from the first to the last illustrate brilliantly this signal merit, one of the greatest which a General can possess. He reconnoitres Toulon, and puts his finger on the spot where the occupation of a height will give the town to the Republican troops. He turns the Alps, as he expresses it, under the eyes of the discomfited Austrians, and, with marvellous accuracy of insight, makes for the Adige, as the real line on which to defy the hosts of the Empire, setting at naught the false tradition of ages. So, too, in Egypt he lays hold of Alexandria as the main point and centre of his whole operations ; he sees at a glance in the campaign of 1800 the great advantage of the base of Switzerland, and urges Moreau to use it ; and he illustrates his own precepts by advancing behind the screen of the Alps, and, falling upon the rear of Melas, compelling him to stand and fight at Marengo. In the same way he perceives how the forward position of Mack at Ulm gives him an opportunity of hemming in the Austrians ; how the region of the Saale was the true route to fall on the Prussians in 1806, and to cut them off from the fortresses on the Elbe ; how the valley of the Danube is the avenue to the heart of the Monarchy of Austria in the campaign of Ratisbon and Wagram. Nor was this excellence less conspicuous in his latter and unsuccessful wars. He invades Russia in 1812 at evidently her most vulnerable point ; he shows the extraordinary value of the double barrier of the Marne and the Seine when defending France in 1814 ; he concentrates his army at the precise spot where an attack would be most decisive in his bold but disastrous spring upon Belgium.

Another of Napoleon's highest characteristics was his appreciation in most instances of what ought to be, in a great campaign, the main object to be attained, and, consequently, the extreme ability of his general operations against an enemy. There have been commanders of more prudence, men, too, who could more justly estimate the means and resources within their reach ; but he stands pre-eminent for his perception of the ends at which a General should aim, and, usually, for his efforts to reach them. One of the causes of his excellence was the elaborate care with which he always worked out his military schemes in his mind, before putting them into execution ; for though shallow and ill-considered projects were subjects of his peculiar ridicule, he always insisted that a great captain should settle beforehand in his judgment what to contend for and how to secure it. Here again we see how reflection and study co-operated in forming this great master of his art, though of course his conception were

due also to original powers of the highest order. It is easy to observe in Napoleon's campaigns his eminence in this department of strategy. In 1796 he has made up his mind that the grand object is to defeat the Austrians around Mantua, and he disobeys the commands of the Directory to send a detachment to Southern Italy. In 1800 he refuses to march to the relief of Massena shut up in Genoa, for he knows that, if he can destroy Melas, Genoa will be freed and Italy conquered. So, when the expected sails of Villeneuve do not appear off the cliffs of Boulogne, he forms the design of striking down the Coalition in the plains of Moravia; so in 1809 he risks much to reach the Archduke across the Danube, for victory will then close the campaign; so he attacks Wellington and Blucher in Belgium, for if he "can overwhelm the British Army he will have short work with the rest of the Allies." Akin to this merit is the skill with which Napoleon usually detected the points at which his enemy was weakest, and perceived how the force he himself wielded could be most advantageously used against him. Although his combinations in this respect were obviously those of his greatest predecessors, no general more persistently sought to strike at his adversary's communications, to get, if possible, on his flank and rear, and to unite turning movements with direct attacks, these being merely illustrations of the rule that you should assail your foe where he is most vulnerable; and what has been called his system of interior lines—that is, the manœuvres by which he endeavoured to gain positions from which to defeat a hostile army in divided parts, and to prevent its concentration by keeping between them—is, when examined, nothing more than a manifestation of the same principle under certain known conditions of warfare.

We have mentioned some of the chief features of Napoleon's strategy as a scientific system. Additional peculiarities may be noticed, which belong rather to his conduct in the field than to the philosophy of the subject. There have been Generals of greater constancy, of more perseverance in adverse fortune, but he has never been excelled for those rapid decisions which have sometimes proved the safety of armies, or turned the scale in the day of battle. He raises in an instant the siege of Mantua and sacrifices the labours of months, as soon as he hears the approach of Wurmser; he plunges into the morasses of Arcola, when he fails to carry the position of Caldiero; he dashes against the Somo Sierra, in what Napier calls an inspired moment; he gathers together, as if by instinct, his scattered columns before Landshut and Ratisbon. Nor is this brilliancy less remarkable than this masterly art in concealing his plans and taking his enemy by surprise. This, indeed, has been called his highest gift, and his campaigns abound in examples of it. He induces Beaulieu to halt at Valenza and to watch the northern affluents of the Po, and he hastens along the southern bank and turns his adversary at Piacenza. He cheats Quasdanovich into the belief that the French army is still distant, and falls on the amazed Austrian as he debouches on the plateau of Rivoli. So in 1800 he persuades

the Aulic Council that the army of reserve is a myth, but he gradually collects to cross the Alps, and sweeps down on the rear of Melas; so, in 1805, he deludes Mack by demonstrations in the gorges of the Black Forest, while the net is closing upon Ulm; so he simulates a defensive attitude to lead the Allies into the false movement that is to end in the ruin of Austerlitz; so he conceals from Brunswick his formidable advance until victory is within his grasp at Jena. Another of his most marked characteristics is his reliance on moral influences, on the credit and renown of his arms as an all-powerful element of success, and, akin to this, his systematic preference of offensive to defensive operations, it being one of his most common maxims that mere passive defence ends in discomfiture. Several illustrations of this will occur to readers familiar with his campaigns, and in this respect he fell in admirably with the temperament of the French soldiery—always capable of great exertions when appeals are made to their passion for glory, and always formidable when they believe they are pressing forward to attack their enemy. Thus, in 1814, he counted rightly on the terror of his name as a potent means to retard the Allies, and to facilitate his bold design of offering a single front of defence to a double but separated line of invasion; and in this campaign his whole operations, although defensive in their ultimate aim, were offensive in their tactical dispositions. Thus, too, in 1815 he did not hesitate in assailing armies nearly double his own in numerical strength, for he trusted confidently in his own reputation and in that of his devoted troops—"are we not the same men?" he proudly exclaimed, when he recalled in his stirring proclamation the "great days" that were not to return; and here again, too, he began the attack, though his object was to repel invasion.

Such were some, at least, of the high qualities and attainments, evident in these volumes, which entitle Napoleon to a foremost rank among the masters of the art of war. Like all great captains, he was, besides, a consummate administrator in the closet and the field; he made his preparations with large forethought, and improved considerably the organization and services of the French armies, having found them at the lowest point of decline, and he reduced rapine to a regular system by the forced contributions and requisitions on which he mainly relied to support his soldiers. Yet, by his own admission, he was too continuously engaged in war to make his armies the perfect instruments he wished them to be; though better ordered and improved in discipline, they retained something of the rude character of the improvised Republican levies, and they never equalled in mechanism and arrangement the formidable hosts which overran France in the memorable campaign of 1870-71. What were the chief faults of this great commander to be placed against his transcendent merits, and to which we may largely ascribe his ruin? One of the principal was that his imagination sometimes got the better of his sounder judgment, and that, accordingly, in the pursuit of his objects, he disregarded and underrated difficulties, despised antagonists worthy of respect, and over-estimated his own resources. Napoleon's military schemes were, usually, almost faultless in design

and connection ; but he was not so successful in adapting his means to his ends in all cases, from over-confidence and a too sanguine temper. We see this defect in a special manner when we examine his naval projects, for in these experience did not correct the extravagance of his ardent mind, and, brilliant and startling as they often were, they abound in false and erroneous assumptions ; but it occurs, also, in several of his campaigns, whether marked with success or with disaster. He nearly incurred defect at Marengo because he believed he could hold Melas, who he supposed to be paralyzed by fear, with a force much too weak for the purpose, and, but for the arrival of Desaix, he would have lost the fruits of his splendid strategy. He insists, in order to crush the Archduke, whom he knows he can defeat in a pitched battle, on crossing the Danube on a frail bridge, and fighting with a great river in his rear ; and, notwithstanding the heroism of his army, he is well-nigh overwhelmed at Essling. In 1812 he is perfectly aware of the danger of an advance from Smolensko, but he believes he will end the war at Moscow ; and he hastens forward, neglecting precautions which many inferior men would have taken. In 1813, after unwisely rejecting the magnificent terms of the Coalition, he plants himself boldly on the Elbe, convinced that on this formidable line he will renew his triumphs on the Adige ; but he forgets that his army abounds in conscripts and in lukewarm or disaffected allies, and that the passion for independence fires his enemies to unwonted daring ; and thus, though his strategic combinations were never more skilful and well-laid, he sees Vaudamme destroyed at Culm, and Ney routed with terrible loss at Dennewitz, and he is at last brought to bay and hemmed in at Leipsic. Again, in the Campaign of 1815, his general dispositions are admirable, and in all probability would have succeeded against men of the school of Alvinzi and Wurmser ; but in his contempt for the Allied Commanders he assumes that Blucher is in eccentric retreat, and that he can destroy Wellington on the 18th of June ; and, accordingly, he detaches Grouchy in a direction where the Marshal is useless ; he wastes time in making demonstrations along the slopes of La Belle Alliance, and the result is Waterloo.

It should be said, too, that in mere tactics, in the art of handling troops in the field, Napoleon was certainly not so great as in the combinations of strategy. He added nothing in this respect to what had been previously known, and as a tactician he was inferior to Frederick the Great and the Duke of Wellington. Inheriting from the French Revolution the system of fighting in deep masses, he did not improve it to any great extent, or lessen the waste of life it entailed and though, by the organization of *corps d'armee*, with powerful reserves in his own hand, he gave strength, coherence, and unity to the loose and weak Republican arrays, he did not change their method of giving battle, which Wellington always condemned as defective. Excellent observations may be found in his works as to the necessity of combining the three arms, as to the true methods of employing each, as to the propriety of adapting formations to the local peculiarities of the ground, and avoiding a rigid and uniform order ; but though as an

artillerist he was great, for he had studied the science deeply, he had little experience of what infantry and cavalry could attempt or perform before he was invested with supreme command; and, speaking generally, in the use of them he trusted rather to quick movements, to imposing effects, and to brilliant display, than to strength of fire or decisive charges. There can be little doubt that the huge bodies of horse on which he relied so often to awe his enemy, or to seize a vulnerable point in his line, did not really accomplish as much as the unrivalled squadrons of Seidlitz; and his columns of foot, however threatening, were invariably baffled by the lines of Wellington. Though Napoleon, too, like most great commanders, could fashion excellent soldiers and officers out of almost any native material—it is curious to observe that he thought all troops pretty much alike when well organized and well led,—it has been said that in his hands the French army lost a great deal of its most valuable and finest qualities. He is charged with having destroyed in it the spirit of patriotism and enthusiasm; its spontaneous vigour and independence; and with having converted it into a mass of disciplined but submissive prætorians, most formidable when commanded by himself, but incapable of producing great leaders, and on a dead level of demoralization and selfishness; and it has been especially urged that he so extinguished all self-reliance in his lieutenants, and compelled them to such passive obedience, that he rendered them unable to think for themselves and to act boldly and from their own intelligence. These charges are in part exaggerated—for instance, men like Massena and Soult were not exactly “Jesuits of the camp”—and when true they ought not to be laid wholly to the account of Napoleon; but they are founded in fact to a considerable extent, and with the French army as with the French nation, his all-embracing despotism tended to destroy the sources of individual energy and to corrupt the power on which it mainly rested.

---

## II.

From a consideration of the qualities which distinguished Napoleon as a commander we turn to examine the maxims relating to war he has given us in these volumes. We cannot, of course, exhaust the list, but the principal ones may be briefly noticed; and we shall add a few of his remarks on the political events in which he took part, and the condition of Europe in his time. One of the cardinal points on which he insists is the necessity in preparing for a campaign of a thoroughly well matured plan, founded on a complete knowledge of the theatre of war and of all possible lines of operation, and on calculation of the resources and probable intentions of the enemy. He says:—

“The plan of a campaign ought to provide for everything that the enemy can accomplish, and to secure the means of baffling his schemes.”

He illustrates this by the memorable instance of the campaign of 1800, in which the main direction of the Austrian armies, thrown forward in Italy in great force, and not sufficiently strong in Germany,

enabled the First Consul to execute the Alpine march which led to Marengo, and would have involved Kray in a similar fate had Moreau been equal to his mission :—

“The frontier of Germany was the predominant one in this campaign; the frontier of the Riviera of Genoa was only secondary. Accordingly, the First Consul concentrated the main forces of the Republic on the predominant frontier. The Aulic Council collected its principal army upon the secondary frontier of Italy. This false disposition, this violation of a great principle, was the essential cause of the catastrophe which befell the Austrians.”

That a strategic project should anticipate what your enemy can and ought to do, Napoleon illustrates by the curious assumptions of the Aulic Council in 1796, that he would remain quiescent around Mantua, while first Wurmser and then Alvizi surrounded the French on all sides :—

“This combination would have been a fine one if men, like mountains, could not move. Austrian strategists have constantly made this mistake; they have forgotten the popular proverb that, if mountains cannot move, men can. The Aulic Council, which had drawn up the plan of Wurmser, assumed that the French Army was immovable and fixed to the fortress of Mantua; this gratuitous supposition cost Austria one of her best armies.”

Napoleon, however has furnished himself a more striking instance of the truth of this maxim. He did not reflect that, after Ligny Blucher might try to join the English by taking an interior line by Gembloux and Wavre; and he followed Grouchy to go in a wrong direction, with results sufficiently known to history.

Another of Napoleon's leading maxims is, that strategic operations ought to be simple—that is, should not be difficult in execution, should not depend on too fine calculations, or on nice and improbable contingencies, and should make allowance for disturbing causes. He expresses it thus :—

“War being an art in which everything depends on the execution of what is proposed, all complex combinations should be rejected. Simplicity is the first condition of sound strategy.”

The most conspicuous example in history of the result of disregarding this principle is the march of M'Mahon to the relief of Metz. That march possibly might have succeeded; but it was so perilous and difficult in itself, it assumed that so many doubtful chances would concur in its favour, the failure of any—a most probable event—being almost certain to induce a disaster, that it cannot in any way be justified. Napoleon illustrates the rule by arguing that Blucher should not have fought at Ligny, because it was extremely uncertain, considering the position of the French Army, that Wellington could join him from Quatre Bras; the Allies, he says, ought to have adopted the simple, obvious, and sure course of falling back on an interior line. Recollecting what happened on the 16th June, the Duke probably agreed in this view :—

“Marshal Blucher, as soon as he had been made aware that the French were at Charleroi—that is, on the evening of the 15th,—ought to



have assembled his army, not at Fleurus, not at Ligny, already under the enemy's guns, but at Wavre. The French could not have reached Wavre until the 17th; he would, therefore, have had the whole of the 16th and from the 16th to the 17th, to effect the concentration of his army."

A third maxim of paramount importance, and one of the great secrets of Napoleon's successes, is that you should march directly for the decisive point whenever the operation is possible, and not imagine that the occupation of fortresses or natural obstacles is necessarily the chief end to attain. He illustrates this rule, his application of which caused a revolution in the art of war, by showing how absurd is the exploded notion—on which, however, the belligerent Powers based the whole campaign of 1799—that the possession of mountain ranges gives the possession of the plains below, and enables you to dominate the whole region:—

"Your enemy has large towns, fertile provinces, a capital to protect, make straight for these. The art of war is simple and practical, and requires good sense, not ideology. . . . This campaign of 1799 was planned at Paris by men who had no real knowledge of war. Mountains depend on the plains, and have no more influence in commanding the plains than the positions they afford for guns."

Napoleon often lays it down as a rule that, especially in invading an enemy's country, you should operate on a single line, and, if possible, with a single army. His famous campaign of 1796, and the failure of that of Moreau and Jourdan in the same year against the Archduke Charles, sufficiently prove the truth of the maxim under the ordinary conditions of war in those times, and it is still a principle to be generally observed. But the huge size of armies in our days, which makes it impossible to despatch such masses on anything like a single line, and, in some measure, the modern inventions of railways and the field telegraph, which enable commanders, although separated, to communicate surely with each other, have modified the rule in certain instances, and we have recently seen invasions, conducted with the highest ability, with armies moving on distant lines, and never concentrated into one body. It may be remarked that Napoleon himself adopted this course in 1812, when he marched his enormous host into Russia, and it may, therefore, be said that though the maxim ought to be followed in its essential spirit, which is simply that you ought to avoid, unless you can do so without risk, dividing your forces before your enemy, it is not applicable under certain circumstances. But now, as ever, the principles hold that, unless your superiority in force is immense, you should always have your army united, when about to give battle to your enemy, and that an army, when liable to be attacked, or when itself about to attack, should be able to put forth its whole strength. These principles appear obvious, yet the difficulty of applying them is very great, and taxes the strategist often to the utmost. Napoleon says:—

"Keep your army well in hand, concentrate on the field of battle the entire of your forces; do not omit a single chance; for Fortune is

a woman, and if you neglect her to-day, she will fail you to-morrow. . . A General is often mistaken as to the real strength of his enemy. Hence it should be an axiom that an army ought at all moments to be prepared to offer the greatest possible resistance, that the soldiers should have their arms in readiness, that infantry, cavalry, artillery, and commanders should be in their places; that all the divisions be so posted as to support each other. . . . A great Captain ought to say to himself several times a day, what ought I to do were the enemy to appear on my front, my right, or my left? If he finds it difficult to answer the question, his position is a bad one."

Success should not blind the critic to the danger of disregarding this maxim, the violation of which has been the cause of some of the most signal disasters. Thus Marengo was nearly lost by Napoleon because he detached Dcsaix before the battle, and Wellington has been generally blamed for having sent a division to his extreme right which remained useless during the crisis of Waterloo. One of the most remarkable instances of success, in spite of the neglect of this rule, will be seen in the great victory of Moreau at Hohenlinden. Napoleon remarks of:—

"Upon that day, which decided the issue of the campaign, six French divisions, half the army, were engaged also with nearly the whole Austrian army. The belligerent forces were about equal in numbers on the field—70,000 men on each side; but the Archduke John had concentrated all his troops; Moreau might have combined nearly twice as many. . . . The battle was a complete victory; but it cannot be attributed to skill in manœuvring or to fine military combinations."

Some of the principles laid down by Napoleon are curiously illustrated by the results of the late memorable campaign in France. Had his nephew pondered on the following passage when he was lingering hesitatingly upon the Saar, losing the precious moments when partial success, as is now well known, was at least possible, and exposing his army to be overwhelmed when the German masses were once united?—

"At the outset of a campaign you should consider carefully whether to advance or not; but, when once you have begun offensive operations, you should persistently carry them out to the last; for, apart from military credit and the *morale* of the army, which is enfeebled by a retreat, and the courage with which the enemy is inspired, retreats are more disastrous than even the most bloody battles."

Napoleon was fully alive to the use of fortresses and entrenched camps—there are some admirable remarks in these volumes on the value of these artificial obstacles—but he properly condemned the foolish notion that they could wholly supply the want of generalship, numbers, moral strength, and military efficiency. He especially showed the danger of giving battle with a defeated army under the supposed protection of a strong place. The following, which we quote at length as a specimen of his inductive method, sounds like a commentary on Metz and Sedan:—

"The Romans, after the battles of Thrasymane and of Cannæ, lost their armies, and yet these battles were fought in the midst of their fortresses. Hannibal was beaten at Zama, under the walls of Carthage; he lost his army as the Romans lost theirs at Thrasymane and Cannæ. At Marengo Melas lost his army, yet he had many fortresses at hand. The army of Mack upon the Iller was on a theatre of its own choosing, and yet it laid down its arms. The veteran army of Frederick the Great, with heroes at its head—Brunswick, Mollendorf, Ruchel, Blücher—when beaten at Jena, could not escape; in a few days 250,000 men surrendered; and yet it was not without reserves and the protection of fortresses, and it was close to its capital! Take every precaution to insure success when you are about to fight a great battle, especially if your adversary is a great captain; for, if you are defeated, woe to the vanquished, though you are in the very midst of your magazines and strong places!"

The following illustrates one reason why the movement to the relief of Metz was perilous in a high degree:—

"When an army has once been defeated it is a most critical operation to call in its detachments and reserves and to attempt to resume the offensive; the task requires a profound knowledge of the principles of the art of war on the part of a commander; and then, above all, mistakes lead to defeats, and may entail ruin."

This observation on the false movement which preluded the defeat on the Trebbia may be read as a comment on the march to Sedan:—

"To march with an army of 40,000 men for 40 leagues in the valley of the Po, from Bologna to Novi, your right flank being exposed at all points along the Po, the left bank of the river being held by the enemy, and that, too, without having the means of protecting your rear, so that you were exposed to be attacked in front, flank, and rear—such an operation was madness. But if such a movement was to be undertaken, it should have been executed rapidly, with the speed of lightning; the French army should have been on the 28th of May at Modena, on the 4th of June at Novi. But Macdonald delayed."

Flank marches within the reach of an enemy are condemned by Napoleon with special censure; he demonstrates in an admirable essay that the "oblique order" of Frederick the Great does not, when properly understood, fall within the prescribed category, and that the manœuvre of turning a hostile wing, provided you can be attacked in flank when trying to effect the turning movement, is contrary to the principles of war, unless you are in greatly superior force, or very peculiar circumstances concur. Salamanca and Austerlitz are striking examples of the accuracy of Napoleon's views, and Gravelotte when examined is no exception. Napoleon says:—

"There are two principles of the art of war which cannot be violated with impunity—first, never make a flank march before an army in position; secondly, keep carefully to and do not lightly abandon your line of operation, which is a corollary from the first."

The capitulation of Sedan, we believe, was inevitable in the circumstances of the case. Yet Napoleon, who had experience of the

capitulations of Ulm and Baylen, says truly that surrenders of this kind ought to be judged with extreme severity, and reflect indelible disgrace on armies. We have no wish to censure the fallen, but the following must sound ominously to the Generals who submitted to the catastrophe of the 2nd of September, though we really think they had no other choice :—

“ Since the laws and the practice of all nations permit the commandants of fortresses to surrender and make terms, but have never authorized a general officer and this army to lay down their arms, it may be asserted that no Sovereign, no State, no military usage has ever sanctioned such an expedient. . . . The danger of allowing a capitulation of this kind, or any capitulation but that of a fortress, is evident. It destroys the military spirit of a nation, and weakens its honour; it is the resource of cowards and pusillanimous men. If military usages attached degrading punishment to the offence, of laying down arms in virtue of a capitulation, and inflicted them on Generals, officers, and soldiers, this expedient would not present itself to the minds of military men; they would have nothing left to them but to trust to their courage and perseverance, and what then might they not accomplish ! ”

Except, perhaps, at the Beresina, where the terror of his name and the renown of his army in all probability averted ruin, Napoleon was never in a position in which could he be called on to lay down his arms. He does not hesitate to affirm what a general ought to do in such a situation :—

“ What ought to be the conduct of a General when surrounded by superior forces ? We can only answer in the language of old Horace. Extraordinary situations require extraordinary resolution; the more stubbornly he resists the more chances will he have of receiving succour or of breaking through. How many things which have seemed impossible have been done by brave men with no other resource than to die ! The more resistance you make the more loss you will inflict on the enemy, and the less strength will he have to continue his attack. This question admits of no other solution without destroying the military spirit of a nation and exposing it to disaster.

Marshal Bazaine, it is said, appeals to Prince Frederick Charles in justification of the catastrophe of surrendering Metz. Napoleon makes this pointed remark with respect to vindications of this kind, though he refers to the memorable defence of Genoa by the warrior of Rivoli and Essling :—

“ Much has been said of the homage rendered to Massena by the enemy’s generals while the terms were being arranged. This ought only to have increased his suspicions. When Napoleon wished to increase the credit of the Austrian General Provera, a third-rate officer, he praised him highly, and so imposed upon the Court of Vienna, who gave him another command. He was taken prisoner again at the battle of La Favourita. When the French Commandant of Mantua surrendered that fortress Field-Marshal Kray made him a present of a stan-

dard and praised his valor highly. The praises of an enemy ought to be distrusted ; they will have no weight with a man of honour unless they are bestowed when hostilities have ceased."

Napoleon, at a well-known conjuncture, disobeyed the orders of the Directory, for he believed they would be fatal to his army, and the result more than justified the act. He lays down the General proposition that a Commander-in-Chief is not relieved from responsibility if he follows injunctions which he is satisfied are rash and unwise ; he ought to decline to carry them out. This maxim ought to have been remembered by MacMahon before he broke up from Chalons :—

" Had Napoleon executed the orders of his Government he would have marched with 20,000 men upon Rome and Naples, leaving the rest of the army under Mantua with Kellermann in command. In that event Italy and the army would have been lost. He would only have obeyed the order of a higher authority ; but he would not the less have been to blame. A Commander-in-Chief is not relieved from responsibility by the order of a Minister or of a Sovereign not upon the spot, or who is wholly or partly ignorant of the exact state of existing circumstances. 1. A Commander-in-Chief, who undertakes to carry out an operation which he thinks misconceived or disastrous, commits a crime ; his duty is to make objections, to insist upon a change, to offer to resign rather than become the instrument of ruining his troops. 2. A Commander-in-Chief who, in consequence of superior orders, fights a battle which he is assured he will lose is equally criminal."

Napoleon insisted on the expediency of fortifying the capitals of States ; and to a discerning judgment the last great campaign affords strong confirmation of his views. The defences of Paris enabled France to prolong the war beyond all expectation, exposed the invaders to serious dangers, and actually caused the final issue to appear doubtful for some months, though the nation had suffered unparalleled reverses, and the most ruinous mistakes were made in the general operations of the French. Napoleon's remarks seem almost prophetic :—

" How, it is said, can you fortify cities of which the circumference is immense ? Eighty or a hundred fronts will be required, 50,000 or 60,000 soldiers, 800 or 1,000 cannon in battery. But 60,000 soldiers make up an army ; would it not be better to employ them in the field ? This objection is commonly made against large fortresses, but it is unsound, for it forgets the difference between a soldier and a man. To defend a great capital 50,000 or 60,000 men may be needed, but not 50,000 or 60,000 soldiers. At moments of great disasters and defeats States may be without soldiers, but they will always have men for their defence at home. 50,000 men, with 2,000 or 3,000 artillerymen, will defend a capital and keep an army of 300,000 or 400,000 men at bay ; but these 50,000 men, if they are not real soldiers, commanded by experienced officers, will be set to flight by 3,000 horsemen."

Napoleon may have, perhaps, exaggerated the importance of a Commander-in-Chief in deciding the issue of military operations, and

have underrated discipline, organization, and numbers; but history is, on the whole, on his side :—

“ A General is the head, the soul of his army. It was Cæsar, not the Roman army, who conquered Gaul; it was Hannibal, not the Carthaginians, who brought terror to the gates of Rome; it was Alexander, not the Macedonian army, who made a way to the Indus; it was Turenne, not the French, who reached the Weser and the Inn; it was Frederick the Great, not the Prussian army, who defended Prussia during seven years against the three chief Powers of Europe.”

The first mental requisite of a General, he insists, is judgment and freedom from illusions :—

“ The highest quality of a Commander-in-Chief is a cool intellect, which takes in right impressions of things, is never excited, is not dazzled or disturbed by good or bad news. He ought to be able to classify and give their proper significance to all the reports which may come to him in the course of the day, for good sense and just conclusions are the result of comparing intelligence well weighed and estimated. There are men who, owing to their moral or physical constitution, see only through their imaginations. However great may be the learning, fine the talents, or high the courage and attainments of such men, nature has unfitted them to command armies or to direct great military operations.”

The great moral requisite is strength of character :—

“ A General ought to have as much strength of character as talent; men who have great talents and no strength of character are unfit for war—it is like a ship all sails and no ballast; they would do better with less talents and more strength of character. Men who have only moderate talents and strength of character in proportion often succeed in this art: the column and the pedestal ought to harmonize. A Commander with great talents and great strength of character may be a Cæsar, a Hannibal, a Turenne, a Prince Eugène, a Frederick the Great.”

For mere “ systems ” and “ compendiums ” of the art Napoleon entertained profound contempt. Original genius and attentive study of the operations of great commanders are, he asserts, the real conditions of mastering the principles of military science :—

“ Generals-in-Chief are guided by genius and by experience. Tactics, evolutions, the science of the engineer and of the artilleryman, may be learnt in treatises like geometry; but a knowledge of the higher parts of war can be acquired only by experience and by meditating on the history of war and on the achievements of great captains. We do not learn in a grammar how to compose the *Iliad* or a tragedy of Corneille.”

These volumes, as we have said, contain some excellent observations on tactics; but in this branch of the art of war Napoleon's eminence was less conspicuous than in the combinations of strategy. The principal rules he lays down are that there is no definite order of battle, that formations ought generally to be adapted to the local accidents of the field, and that the three arms ought to support each other.

Though he was an admirer of the great classical chiefs, he thoroughly understood the essential difference in war caused by the invention of firearms; and he makes these remarks on the distinction between ancient and modern orders of battle, misunderstood by the pedants of his time:—

“A Roman army arrayed itself in three lines at short intervals between each, the cavalry being on the wings. The arrangement was mechanical; it required neither invention, nor talent, nor experience. With the moderns, on the other hand, the occupation of a position for a camp or an engagement is subject to so many conditions that it requires experience, insight, and genius. It should be the duty of the Commander-in-Chief, for there are many ways of encamping or taking an order of battle, even in the same position. No uniform rules can be laid down; there is no natural order of battle in modern warfare.”

He insists that the order of battle ought usually to conform to the peculiarities of the ground, though other circumstances must be taken into account:—

“The manner of occupying a position for a camp or to give battle depends on the field itself, and a variety of circumstances; it varies according to these, and should be decided by the Commander-in-Chief.”

That the three arms ought always to act together was, perhaps, his principal tactical maxim. He says:

“The three arms can never dispense with each other; they ought always to be so placed as to give mutual assistance.”

He condemns especially the employment of infantry without sufficient guns:—

“Good infantry are the mainspring of an army; but the best infantry becomes demoralized and is destroyed if it has to contend against very superior artillery. A General with better infantry and a weak force of guns may obtain advantages in a campaign, but if his adversary is stronger in artillery this will be painfully felt in a general action.”

Like all great commanders, he attached much importance to really good cavalry, though it is doubtful if he made the best use of it. He says:—

“Charges of cavalry are efficacious at all periods in a battle—the beginning, the middle, and the end; they ought to be executed whenever the enemy’s infantry exposes its flank, especially if it is engaged at the same time in front.”

He makes these observations on the importance of field works in modern war, and thought that this branch of engineering science had not been sufficiently developed. Great progress, however, has been made since his time:—

“The principles of field fortification require improvement. This part of the art of war is susceptible of much amelioration.”

It is remarkable that he fully appreciated the merits of the local organization of armies adopted by the Germans, though he had

never leisure to adopt it himself. He speaks thus of what he conceived would be an almost perfect system:—

“The French Empire contained a population of more than 40,000,000 souls. It was to have been divided into 40 districts, each with a million of inhabitants. A regiment was to be raised and recruited in each district. A remedy would have been found against the provincial spirit by a provision that all the officers and half of the sub-officers of each regiment should belong to districts different from its own.”

Recent experience seems to be rather against the value in war of old soldiers, but let us hear Napoleon:—

“The service of the recruit ought to be extended to ten years, that is, until he has reached the age of thirty. He ought then to be liable to serve in the reserve. Man is in his greatest strength from his thirtieth to his fiftieth year; that is the best age for the soldier.”

Napoleon's views as a politician are fully developed in these volumes. The most striking of his characteristics is his reverence for the power and traditions, the pomp and stateliness of the Ancient Régime, and his profound dislike of the Revolution, and contempt for its fanatical theories. He calls Louis XVI. an injured Messiah, denounces his death as an inexpiable crime, declares that the mission of the Empire was to reconcile France and her new interests with the old order of things in Europe, and describes the “ideology” of the school of Rousseau and the Republican propaganda as national plagues. He boasts that as soon as he found himself at the head of an army, he endeavoured to stop the “war of opinion” preached by the Directory, and he claims credit for reducing the contest to one between ordinary belligerents for making treaties with aristocracies and kings whenever he found it suit his purpose, for quieting the Revolutionary mania, for reviving the secular policy of Richelieu in the relations of France with foreign countries. In this conduct he undeniably displayed the sagacity and the craft of a statesman; and the treaties of Luneville and Amiens were due, in part, to his political tact as well as to his military skill; but it is not less true that by opposing the intellectual ideas of the Revolution and by making self-interest, glory, and force, the guiding principles of the Empire, he gradually destroyed whatever was noble and generous in the great movement of France, and ultimately turned all Europe against her. It is curious, too, what while he condemns the ambition and violence of the Directory, its rapacity and its aggressive spirit, he seems unconscious that he is pointing the censure of History against himself. The following *resumé* of the policy of France from 1796 to 1800 will serve for an account of his own, in its results at least, if not in its motives:—

“The general system of the Directory was to domineer, to disregard justice, the Constitution, and reason, to divide in order to rule, to proscribe, to enrich its dependents, and to disturb Europe.”

In enumerating the reasons which induced him to negotiate the Treaty of Campo Formio he seems unaware of their pure selfishness:—



‘It was the interest of Napoleon to make peace. France needed peace; and glory and the esteem of the French people were means for him to attain the height of his ambition.’

He avowed boastfully the Machiavellian spirit which prompted his negotiations with Austria and induced him to sacrifice Venice to her:—

“The Republic of Venice was an aristocracy; it was an object of the greatest interest to the Cabinets of St. James’s and St. Petersburg; the House of Austria would, by appropriating it, excite to the highest pitch their jealousy and displeasure. . . . The French negotiator resolved to put an end to the war of principles between the oligarchy reigning in London, Vienna, and St. Petersburg, and the Republicans of Paris, a war which isolated France; to throw an apple of discord among the Allies, to change the position of the question, to arouse new passions, to create new interests.”

He describes complacently his spoliations and exactions in Italy in 1796, though it must be added that he did not set the example of this outrageous rapine:—

“The Duke of Parma was of no political importance; nothing was to be gained by taking possession of his States. Napoleon allowed him to administer them, imposing on him, as a condition of an armistice, every sacrifice of which they were capable. Thus all the advantages of Government were obtained without any of the troubles. It was the wisest and most simple plan.”

He boasts that he inaugurated the system of robbing nations of their treasures of art:—

“On this occasion Napoleon imposed a contribution of paintings and statues for the museum at Paris. This was the first example in modern history of the kind. Parma supplied twenty paintings, among others the famous St. Jerome.”

His political observations sometimes reveal true insight and discriminating genius. Fifty years before the event he prophesied the great movement towards national unity, which grew out of the Revolutionary wars, and he seems to have felt that he had been made an instrument to promote this object. The following, written in 1820, is curious:—

“Although the south of Italy is separated by its situation from the north, Italy is nevertheless a single nation. The unity of manners, of language, of literature, must at some future period, more or less distant, combine all its inhabitants under a single Government. Opinions are divided as to what will be the future capital of Italy. I think that Rome, although it does not possess every advantage, will assuredly be the capital of the nation some day or other.”

The following has a strange significance, as we look back on the history of the last five years, and think of Sadowa, of Sedan, and of the Revolution of the 4th of September, 1870:—

“Had it been my fate to have been born a German prince, I would assuredly have succeeded in ruling over 30 millions of Germans formed into a nation; and from what I know of that race, I do not

never leisure to adopt it himself. He speaks thus of what he conceived would be an almost perfect system :—

“The French Empire contained a population of more than 40,000,000 souls. It was to have been divided into 40 districts, each with a million of inhabitants. A regiment was to be raised and recruited in each district. A remedy would have been found against the provincial spirit by a provision that all the officers and half of the sub-officers of each regiment should belong to districts different from its own.”

Recent experience seems to be rather against the value in war of old soldiers, but let us hear Napoleon :—

“The service of the recruit ought to be extended to ten years, that is, until he has reached the age of thirty. He ought then to be liable to serve in the reserve. Man is in his greatest strength from his thirtieth to his fiftieth year; that is the best age for the soldier.”

Napoleon's views as a politician are fully developed in these volumes. The most striking of his characteristics is his reverence for the power and traditions, the pomp and stateliness of the Ancient Régime, and his profound dislike of the Revolution, and contempt for its fanatical theories. He calls Louis XVI. an injured Messiah, denounces his death as an inextinguishable crime, declares that the mission of the Empire was to reconcile France and her new interests with the old order of things in Europe, and describes the “ideology” of the school of Rousseau and the Republican propaganda as national plagues. He boasts that as soon as he found himself at the head of an army, he endeavoured to stop the “war of opinion” preached by the Directory, and he claims credit for reducing the contest to one between ordinary belligerents for making treaties with aristocracies and kings whenever he found it suit his purpose, for quieting the Revolutionary mania, for reviving the secular policy of Richelieu in the relations of France with foreign countries. In this conduct he undeniably displayed the sagacity and the craft of a statesman; and the treaties of Luneville and Amiens were due, in part, to his political tact as well as to his military skill; but it is not less true that by opposing the intellectual ideas of the Revolution and by making self-interest, glory, and force, the guiding principles of the Empire, he gradually destroyed whatever was noble and generous in the great movement of France, and ultimately turned all Europe against her. It is curious, too, what while he condemns the ambition and violence of the Directory, its rapacity and its aggressive spirit, he seems unconscious that he is pointing the censure of History against himself. The following *resumé* of the policy of France from 1796 to 1800 will serve for an account of his own, in its results at least, if not in its motives :—

“The general system of the Directory was to domineer, to disregard justice, the Constitution, and reason, to divide in order to rule, to proscribe, to enrich its dependents, and to disturb Europe.”

In enumerating the reasons which induced him to negotiate the Treaty of Campo Formio he seems unaware of their pure selfishness :—

‘It was the interest of Napoleon to make peace. France needed peace; and glory and the esteem of the French people were means for him to attain the height of his ambition.’

He avowed boastfully the Machiavellian spirit which prompted his negotiations with Austria and induced him to sacrifice Venice to her:—

“The Republic of Venice was an aristocracy; it was an object of the greatest interest to the Cabinets of St. James’s and St. Petersburg; the House of Austria would, by appropriating it, excite to the highest pitch their jealousy and displeasure. . . . The French negotiator resolved to put an end to the war of principles between the oligarchy reigning in London, Vienna, and St. Petersburg, and the Republicans of Paris, a war which isolated France; to throw an apple of discord among the Allies, to change the position of the question, to arouse new passions, to create new interests.”

He describes complacently his spoiliations and exactions in Italy in 1796, though it must be added that he did not set the example of this outrageous rapine:—

“The Duke of Parma was of no political importance; nothing was to be gained by taking possession of his States. Napoleon allowed him to administer them, imposing on him, as a condition of an armistice, every sacrifice of which they were capable. Thus all the advantages of Government were obtained without any of the troubles. It was the wisest and most simple plan.”

He boasts that he inaugurated the system of robbing nations of their treasures of art:—

“On this occasion Napoleon imposed a contribution of paintings and statues for the museum at Paris. This was the first example in modern history of the kind. Parma supplied twenty paintings, among others the famous St. Jerome.”

His political observations sometimes reveal true insight and discriminating genius. Fifty years before the event he prophesied the great movement towards national unity, which grew out of the Revolutionary wars, and he seems to have felt that he had been made an instrument to promote this object. The following, written in 1820, is curious:—

“Although the south of Italy is separated by its situation from the north, Italy is nevertheless a single nation. The unity of manners, of language, of literature, must at some future period, more or less distant, combine all its inhabitants under a single Government. Opinions are divided as to what will be the future capital of Italy. I think that Rome, although it does not possess every advantage, will assuredly be the capital of the nation some day or other.”

The following has a strange significance, as we look back on the history of the last five years, and think of Sadowa, of Sedan, and of the Revolution of the 4th of September, 1870:—

“Had it been my fate to have been born a German prince, I would assuredly have succeeded in ruling over 30 millions of Germans formed into a nation; and from what I know of that race, I do not

think, if they had once elected and proclaimed me their Sovereign, they would have deserted me and left me here. But, however that might have been, Germany will sooner or later acquire her unity. The impulse towards it already exists; and I doubt if, after my fall and the termination of my policy, any other system is possible in Europe than the agglomeration and confederation of great nations."

It is an interesting question how far the maxims on the art of war of this great man are applicable at the present time. It may safely be asserted that the general principles of strategic science laid down by him are as true now as ever they were; and Von Moltke has declared that the art of war changed more decidedly during the period between Frederick the Great and Napoleon than between Waterloo and Sadowa. It should be the object of a General now, as in the days of Jena and Austerlitz, to understand perfectly the theatre of war, to have a well-laid and matured plan, to operate on the decisive points, to assail the enemy where he is most vulnerable, to have his army always prepared, to avoid being defeated in detail, to combine turning movements with direct attacks, to reach, if possible, the flank and communications of his adversary without exposing his own to danger. But, as Jomini remarked some years ago, and as recent experience has proved, the modes of attaining some of these ends have been to a certain extent modified; and a few of Napoleon's subordinate rules and illustrations of military combinations require to be in part qualified. Thus, as we have said, operations by distinct armies, on separate lines, are less likely to be objectionable, and will be more commonly undertaken than they would have been forty years ago; and Napoleon's system of interior lines, as the same great critic has pointed out when commenting on the campaign of 1813, will probably produce less striking results with the immense armies of the present day than it did in the campaigns of 1796 and 1814. With respect to tactics, the dense formations, the heavy masses, and the manœuvres which rather aimed at effect than at strength of fire and real charges—these characteristics of the French Revolutionary wars, adopted afterwards by Napoleon, have become in a great measure obsolete; but this is rather a recurrence to sound principles than a revolution altogether new. The great improvements effected in modern small-arms and artillery science have increased the difficulty of forming an order of battle, have separated by a wider distance the fronts of armies about to engage, have multiplied the responsibilities of the Commander-in-Chief, have caused formations to be less deep, have made skirmishing of greater importance, have compelled troops in attack and defence to have more than ever recourse to cover, have certainly lessened the power of cavalry as an offensive arm against unbroken infantry, and, speaking generally, have augmented the value of intelligence and skill in the individual soldier; but it is a mistake to suppose that all this has made the art of war essentially different from what it was in the days when Napoleon proved himself a master of it.

## IV.

**The Tactics of Prussian Infantry.\***

Captain Robinson has done well to obtain the sanction of the Duke of Wurtemberg and give his pamphlet, on the system of attack by the Prussian infantry during the late war, a better circulation in England than it could have so long as it remained in the original language. It would be difficult for any officer desirous of improvement to read this little book, comparing it as he goes with the "Tactical Retrospect," without finding himself with feet firmly planted on a new platform. The author of the "Tactical Retrospect" undertook to criticize Prussian tactics even after the success of 1866. He praised the infantry, but showed how there were certain dangers in the system of the Prussian army, only to be met by some modification of their method of attack, and especially by better assistance from the cavalry and artillery. All the world saw the marked improvement shown by these two arms in 1870-71, but only the few understood that the advice to the infantry given by Captain May was found to be most valuable, and was, after Sedan, actually adopted with success and economy of life. He showed how the tendency had always been during the war to dissolve battalions into companies and companies into skirmishers or mixed groups, and, instead of trying to hinder this by stricter rules or closer formations, he recognized that herein was to be seen the natural development of tactics since the breech-loading rifle was put into the hands of intelligent soldiers. He said, therefore, "Let us adapt our drill to the circumstances, and arrange so that the dissolution which is inevitable may be foreseen, and so ordered as to be a regular system, while the men, when scattered, may know that they are well supported, and that all is going well." In the late Autumn Manœuvres it was remarked that skirmishers failed to push the attack, and even retired with unreasonable precipitation, while lines faced each other at 200 or 300 yards and fired at such a rate that both sides must have been exterminated, unless one or two lucky men happened to survive. This was because the infantry soldier is accustomed to consider himself safe in line, but in danger when skirmishing. We hold that the reverse is the case, and that the line formation is not suitable to the requirements of tactics since breech-loaders came into use. The objection is, that it cannot adapt itself to circumstances. The experience of 1866 taught the Austrians that heavy columns suffered horribly

---

\* *The System of Attack of the Prussian Infantry in the Campaign of 1870-71.* By Lieutenant Field-Marshal William, Duke of Wurtemberg. Translated from the German by C. W. Robinson, Captain, Rifle Brigade, Garrison Instructor. Aldershot. Mitchell and Co. 1871.

from the fire of breech-loaders. The column which attacked Chlum, after the village had fallen into the enemy's hands, lost about half its numbers in a short time, together with 23 guns. The result of Austrian experience was the adoption of the Prussian division of battalions into four companies, and a further development of a regulated attack in loose order. According to the Duke of Wurtemberg this is exactly what the Prussians came to in the midst of their last campaign, though they began otherwise. Before giving the substance of the pamphlet, it may be worth while to explain that it was first delivered in the form of a lecture to officers at Prague, and afterwards published in the *Journal of the Vienna Military Scientific Society*. In the present condition of Europe military progress is one of the first necessities, and, while the breech-loader and the rifled field piece demand some modification of the old formations and tactics, it would be rash to make changes until the subject has been freely discussed. All the great military countries teem with books, pamphlets, and newspaper articles on modern war. Prince Frederick Charles set the example in the *Brochure*—published anonymously—which is popularly known under the title *How to beat the French*, though that was not its original name. Since then such men as Von Moltke, the Duc de Chartres, the Archduke Albert, and a host of writers of lesser rank, have given the world their ideas in print, generally withholding their names. A collection of the best among these essays translated into English would be of great value, and we commend the subject to the notice of such men as Colonel Ouvry and Captain Robinson.

The Duke of Wurtemberg begins by telling how the first news of the war was that the Bavarians had taken Wissembourg at the point of the bayonet, and the Prussians had stormed the Geisberg at the first rush. Then followed more accounts of positions stormed and the success of bayonet attacks, until Austrians and Russians of the old school, to say nothing of Englishmen, raised their heads and rejoiced at the hopeful revival of old systems of tactics. The disciples of the new school shook their heads and watched carefully for more light to be thrown on the details of the various actions. Soon appeared the fact that no successes had been attained without flank attacks, and even then the list of killed and wounded was observed to be terrible. At first no accounts appeared from the pens of competent military men.

It was not till comparatively late in the war that critical descriptions of battles and skirmishes were seen in print, but from that moment no more was heard of attacks on positions by heavy columns, for the columns were always said to have melted into swarms of skirmishers. The way was prepared by heavy artillery fire, the skirmishers spread, pushed forward, gathered in groups for rushes now and then ; a few men broke through the enemy's line somewhere, the rest flocked to the spot or supported the attack by demonstrations on the flank ; the enemy yielded, and the Germans rushed on with mighty cheers. Such were the invariable accounts given by officers as soon as officers

were there to give them. As soon as the war was over, the Duke of Wurtemberg hastened to visit the scenes of the campaign, and set himself to reconcile the conflicting accounts. The result of his studies is before us.

The superiority of the Chassepot to the needlegun was neutralized, or nearly so, by the want of capacity for taking trouble so inherent in Frenchmen. Taught to trust in their weapons to keep the enemy at a distance, they neglected accuracy of aim. As a rule, the infantry soldiers elevated the muzzles of their rifles at high angles, seldom even putting the butts against their shoulders. Though the firing was wild, it had the advantage of enabling the men to keep well under cover, and caused the Germans to feel the storm of bullets at distances of 1,200 to 1,800 paces. But the result was that the attacking infantry were encouraged to press near so as to be out of the dangerous zone of fire, and ammunition was wasted.

Again, the French held the great and universal principle that the defensive must always remain without result and soon lose its efficacy, unless the defenders are ready to assume the offensive at the right moment. "But here, also," says the Duke, "that superficiality and lack of reflection which is clearly inherent in the Latin people again showed itself. They continued to act according to regulation, or to this or that order, without inquiring why the attempted offensive efforts remained continually unsuccessful."

They took, indeed, the offensive, but only by direct and massive attack in front. With daring courage, great activity, and unparalleled *élan*, densely massed groups, starting from behind their cover, threw themselves on the enemy, interfering by their forward rush with their own riflemen, and soon came under the "schnell fire," or volleys of the standing or halted infantry; they were then forced, with fearful loss, to retire again behind their cover. Flanking movements—offensive efforts of small bodies by fits and starts, which, under the protection of fire delivered from good cover gradually rally and accumulate, in order to attempt the assault in the closest vicinity—were manœuvres which were very seldom resorted to by the French. In other words, the French had adhered too long to an obsolete system of tactics. The answer of the Generals to all who impressed upon them the necessity for definitely planned manœuvres to meet the breechloader was, "Our men have a natural aptitude for war, and will do the right thing on the spur of the moment." When the moment came their hearts were too full and their heads too empty to devise new plans. The moment passed by, and they retreated from the ground covered with their slain.

The Prussian method of attack as prescribed in their regulations was that of half battalions. Two companies, nominally 500 men, advance with their skirmishers extended, and fight as well as they can, while the other two companies follow as a reserve or support. But the Chassepot reached beyond the first half battalion, creating havoc in the supports, which, not inclined to retire, pressed forward abreast of their

comrades. The battle then came to depend on the company leaders, and their excellent training, together with the marvellous independent action of the skirmishers, led to brilliant results.

The storming of the Geisberg at Wissembourg was effected by a continuous forward rallying of small extended bodies, behind the frequent but insignificant shelter presented by the folds of the ground or by dead angles; of advances by fits and starts of troops in extended order close to those which had collected together again. As these separate bodies approached the top of the hill they came together of necessity, were then close to the enemy, and made the dash which carried them over the last few paces into the enemy's position, already weakened by the fire of artillery, and placed in jeopardy by the flank attack of the 11th Corps. Again, at Wörth the same tactics prevailed.

The advance of the Germans was preceded and supported by heavy artillery fire, and succeeded because the skirmishers knew how to take advantage of every little bit of cover. The enemy was astonished at the obstinate and indomitable advance of these men, and was shaken and half defeated before the final rush came.

At Gravelotte the storming of St. Privat by the Guards was the nearest approach to attack in deep columns that occurred during the war, and it failed. Eighty-four guns had cannonaded the French position with great effect at from more than 2,000 to 4,600 yards. Three brigades of the Guards then marched to the attack in two lines of columns. The front of attack was about 2,000 paces, so there were about ten men to every pace of frontage. In about ten minutes 6,000 men fell—three men to every pace of frontage—under the murderous fire of mitrailleuses and Chassepots. Heroes as they were, the Guards had to retire without reaching the position, or even nearly approaching it. The Commander of the Guard called back his men only in time to save them from total destruction. It is sometimes asserted that the Prussians have never been tried by defeat. Nothing could be more incorrect than this statement. They have often been tried by temporary defeat, and the value of their training has shown itself in the readiness with which they re-assembled in such order that their second attack, better prepared, was successful. The attack on St. Privat was an instance. The Guards were ready an hour and-a-quarter afterwards, when the Saxons had gained the flank of the enemy, to renew their attack in conjunction with the 9th Corps.

After Gravelotte, says the Duke of Wurtemberg, "The attack in line of columns over open ground was marked out as an impossibility and a useless loss of men, and definitely rejected."

Here we would pause an instant to remark that the fire of the French against the Guards was found to be terrible even at 1,500 paces. There was no overlapping the head of a single attacking column by the defenders. Stiff lines advancing in two ranks would probably have suffered as much as the columns did, or nearly so, for it must be remembered that the French fire was not accurate. Is there a man bold enough to assert that lines of men could have advanced without



breaking over ground so defended? A broken line is the hardest of all formations to put together again under an enemy's fire. If the head of a column melts, the men naturally seek shelter behind their comrades. A line is all front. We shall presently come to the system by which the advantages of the line are retained with more than the mobility of the columns.

First, we must follow the Duke of Wurtemberg in his description of the general features assumed by a Prussian attack, whatever the details or formation of the infantry might be. The author shall speak for himself:—

"The predilection of the Prussians for the concentric form of attack is well-known, and the results obtained by their skilful execution of it justify this. Even out of a paralled advance, a concentric attack usually resulted, because the Prusso-German troops always march on a very broad front, more than a division of the army being seldom placed on one road, and because the ordinary form of their offensive, carried out under all circumstances, framed itself as follows:—

"As soon as the advanced guard struck upon the enemy it laid hold of him and entered upon an earnest struggle of some duration. The artillery was immediately pushed forward in as great strength as possible, and played on the enemy's front from the nearest positions, often at from 1,400 to 1,600 paces, while the infantry was at once directed against one flank of the position (or, if the position was very contracted, against both flanks), in order to surround it. Only a proportionately small force of the infantry was held back as a reserve. All troops coming up afterwards were either, as they approached, directed against the flank (or both flanks) or pushed behind the fighting troops towards the flanks, on which occasions a relief of the reserve was sometimes effected."

The author compares this form of attack to the action of a pair of tongs, and gives an elaborate description of the Battle of Saarbrücken as an example, showing that out of the many attacks made on that day only one, which had been previously prepared by a flanking movement, was successful. After a careful study of the battle, the Duke says, that the fighting of the first period of the campaign "yielded incontestable proof that the attack in line of columns on open ground was a useless waste of men."

Is, then, every position with open ground in front of it unassailable? By no means. The result of Prussian experience was put in practice at the attack of Le Bourget on the 30th of October, 1870, and adopted in principle throughout the rest of the war.

"Le Bourget is a village of some length, the gardens of which are surrounded by long, straight walls, six feet in height, intersecting each other at right-angles. These were prepared for defence by loop-holing and heaping up earth, and the entrance to the village was barricaded. The attack was undertaken from three sides—*viz.*, from Blanc-Mesnil, Dugny, and along the road between them. The two flanking columns sent to the front clouds of skirmishers, which gained

ground at the double, and then threw themselves down. The supports and reserves followed these, spread out in extended order, and also at the double. As these latter threw themselves down to rest, the skirmishers again ran forward, and at the same time bore off towards the flanks. When they arrived within range they again threw themselves down, and opened fire upon the enemy. The gaps which occurred from drawing off towards the flanks were filled up by extending sub-divisions. In like manner the flanks were prolonged by single companies advancing one after the other, but always in extended order, so that the concentric attack, which had, moreover, as the enemy was approached, become denser in character, kept always assuming a more enclosing form. Each of the extended bodies of troops took advantage of whatever cover offered, in order to rally behind it and collect together. Thus, in front of the north-east flank, a row of dung heaps had been left upon the field, which afforded a rallying place for an entire company, which opened from behind these a destructive fire upon troops who came forward to attack. On the other flank, the bed of the brook Le Moleret afforded a slight protection, and was at once turned to account by a few formed companies, in order to cover an onset against a counter attack delivered from Drancy.

"The mechanism of the attack consisted principally in the rapid change from open to close order directly the most trifling cover admitted of the rallying of a sub-division or company. On the other hand, every advance over open ground took place in widely extended skirmishing lines, which moved on like ants.

"The right wing was left behind, the centre had not sufficiently extended itself, and had renounced old forms too little, and its losses were enormous; but the attacking left wing, under Lieutenant-Colonel Graf Waldersee, pressing forward in long thin lines, succeeded in making good an attack of skirmishers up to the garden walls, in silencing the fire from them, and in breaking into the long village both from its flanks and rear. Its defenders now gave way, General Budritzky was able to enter from the front, and the right flank column to reach the rear entrance without very severe loss."

From that time forward the attack in open order, combined with the attack of skirmishers, was adopted as the only efficacious one; and it was strictly forbidden to lead bodies of troops, in close order, within a nearer distance of the enemy than 2,000 paces. Even on close intersected ground the same tactics were found to succeed. Columns were brought up under cover to within 2,000 paces of the enemy. The work was then done by fighting in a loose order, understood thoroughly and properly directed by the company leaders. In making use of the natural features of a country, especially woods, the Prussians have shown themselves hitherto unrivalled. Once, in the great battle before Le Mans, two battalions of Jägers attacked in skirmishing order by night; without firing or even loading, they succeeded in surprising an important position, taking many prisoners. In old instructional books on tactics it is laid down that

for the proper occupation of a position there should be 2,000 men or thereabouts to an English mile of front. The French adhered to this principle, forgetting that the wide range of rifle guns and the quick fire of far-reaching small arms cover now much larger spaces of ground than the old weapons used to do. The more men are crowded together the greater is the effect of artillery force upon them, and it searches out not only the front line but the second line and even the reserves. The Author gives as instances of this fault, the battles of Sedan, Mars-la-Tour, Gravelotte, &c. He says, that if the Prussian Artillery appears to have been so conspicuously superior, the French tactics are alone to blame for offering such excellent living targets. "In moments of anxiety," he says, "the snail, it is true, shrinks into its house, and the tortoise into its coat of mail; but for that reason neither tortoise nor snails will ever dictate laws to the world."

The action of the Prussians was exactly the reverse of this. When acting on the defensive they occupied the objective points with a very small force, and were therefore able to dispose of very powerful bodies for the purpose of wide reaching offence. They almost always succeeded in out-flanking the enemy while holding their front against all direct attacks, even when the French were considerably superior to them in numbers. In the battle of Saarbrücken, at the time when the greatest number of men were engaged, the proportion of men was about five to each pace of frontage. At Metz, on the 16th of August, the enemy were double their own numbers, yet they held their own with six men to the pace. They were more crowded on the 18th of August, because the French right was too far off to be quickly reached. On the 23rd of December, in the action at Querrieux, near Amiens, Manteuffel attacked Faidherbe in a strong position, having his men so extended that hardly two could be counted to the pace. When Prince Frederick Charles and the Grand Duke of Mecklenburg concentrated their forces upon Orleans, there were at the beginning of the action only two men to the pace. When they closed upon the French at the end of the day they had less than five men to the pace. At Le Mans, on the 11th of January, 1871, the Third Corps had only two men to the pace against enormously superior numbers. The whole army of Prince Frederick Charles on that day had but five men to two paces, though the Tenth Corps did not entirely deploy. Finally, at St. Quentin, on the 19th of January, there were at the close of the day only three men to two paces.

Having shown that the Duke of Würtemberg does not argue without solid facts and strong reason on his side, it only remains to sum up his conclusions. He is decidedly of opinion that the attack with musketry fire must supersede the attack with the bayonet. He believes that decisive results are only to be expected from the offensive, and that the defensive when necessary must be regarded merely as a preparation for the offensive. A direct offensive effort against well-handled breech-loaders is ineffectual, while the Prussian mode of attack described above, with offensive musketry fire employed by men in extended

order will soon assert its superiority over the defensive. "This offensive fire action" was impossible with the muzzle-loaders. It requires much patient training, both of officers and men, but it cultivates courage, intelligence, self-reliance, and well-disciplined obedience. But, before it can be practised with any hope of good results, the individual soldier must be trained to personal independence and confidence in his own skill, and must at the same time have thorough trust in the leadership of his officers, for, in the words of the author :

"It is in this that true discipline consists, not in a blind, passive, reluctant obedience, which, being void of confidence, ceases at the decisive movement when it is most essential."

The Prussian mode of fighting which has now been described by Lieutenant Field-Marshal the Duke of Wurtemberg was pointed out in letters to this paper by "A Military Correspondent with the Army of Prince Frederick Charles" during the battles before Le Mans. Since then a sense of the wisdom of it has been growing in the minds of our best and most thoughtful officers. The boast of our infantry and of the Great Duke during the Peninsular War used to be that the English could stand and fight two deep, feeling secure in their own courage without needing a column behind to push them on. The Prussians have now shown that they can both stand and advance fighting without even having comrades on each side of them. It is quite certain that what the Prussians can do the English can do. The Austrians have already adopted this fighting in extended order, and we are persuaded that the adoption of the system for the English army is only a question of time. We may alter the details, if we will ; the principle is secure.

---

## GLEANINGS.

## I

**The Sea Forts at Spithead.**

THE iron framework of one of the principal forts for the defence of Spithead has been finished, and will soon be seen in its allotted place. The structure is unique, and merits description as a wonderful piece of mechanical and engineering achievement. Apart from that, it claims attention from the extreme importance of the subject, considering both the purpose of the work and the outlay of public money which it involves. When erected, it will give the world a visible sign of the magnitude of the undertaking which the War Department has on hand—a proof that something unprecedented in size and strength is being realized. After all the time, and thought, and talk, and money bestowed upon the idea, the country may have at last the gratification of seeing one of the vital points of national defence rendered as safe, to all appearance, as fortifications can make it. In pursuance of this object many of the plans of the last dozen years have had to be reconsidered and amended—many things done and undone, or begun and abandoned. The advance in the power of artillery during that period would alone have altered much that seemed good in the eyes of the Royal Commission of 1859. Nevertheless, the system of defences at Spithead may be looked upon as a fruit of the recommendations of that Commission. Its appointment was due to the strong feeling of insecurity which then prevailed. Looking at the unprotected state of the naval arsenals, and the supposed risk of our naval power being crippled, the Commissioners were instructed to report especially upon the means of making them secure. The protection of Portsmouth against an attacking fleet naturally formed a leading point in the inquiry. The Commissioners recommended the construction of powerful casemated sea forts at Spithead, and the most important of these works have been proceeded with, Parliament having sanctioned them. There are four sea forts to be named in a prefatory survey of the system of works, including one of which we shall give particulars, and which might be termed the most important, were it not that one of the others will be in every respect its exact counterpart.

It must be borne in mind that the object of these defensive works is, even locally considered, a very comprehensive one. It comprises not only the protection of Portsmouth, its harbour and dockyard, from bombardment, but also the defence of the extensive anchorage of Spithead, from the mouth of the harbour to the Isle of Wight. A glance at the map is, therefore, recommended to any reader who has not the geography of the situation well in mind. It will be seen then how obviously the approach may be commanded by two immense sea forts, one

to the north of Ryde Sands, in the Isle of Wight, and the other to the south of Southsea—the island, or, as it may be considered, peninsula of the main land, which forms the eastern side of Portsmouth Harbour, and on which Portsmouth itself is built. As a matter of fact the two principal forts will occupy these positions. One of the two will rise out of the water about 2,000 yards from Ryde Sands, being erected on the shoal called No Man's Land. Its consort will be erected on the Horse Sand Shoal, about 3,500 yards from Southsea. These two forts will not be much more than 2,000 yards apart, as any map must serve to show with the aid of the distances already stated. It then becomes important to note that the only deep channel passes through the space of 2,000 yards. The main approach to Portsmouth Harbour is from the eastward, by this same channel; and the forts on both sides must completely command it. Their guns would probably pierce 12 inches of armour at 2,000 yards' distance. It would seem, if one looked at nothing but these bare figures of range and distance, that the forts would not only be mutual supports, but might some day fire into one another. The reader will assume, however, that it is provided otherwise—that some thing more than the interval of 2,000 yards will always prevent such an occurrence. It is believed that the range of their projectiles would avail to keep an enemy's fleet outside bombarding distances of the harbour, and render it impossible for any fleet to remain at Spithead under their fire, or for any vessel to attempt to pass between them. The two forts remaining to be mentioned are the Spitbank and St. Helen's. The site of the former is the extremity of Spitbank Sand, about 1,200 yards from the northern shore (at Southsea Castle), and 2,500 yards from land to the westward of the entrance to Portsmouth Harbour. The St. Helen's Fort is located on a point of sand off St. Helen's, near the eastern extremity of the Isle of Wight. While the two first-named forts, as has been shown, protect the main approach, the St. Helen's Fort will cover the St. Helen's roads and the channels outside, and the Spitbank Fort will command the anchorage of Spithead, as well as the channel leading into the harbour. Of the strength and armament of all these forts we shall have more to say. Meantime, it should be noted that the system of defence is supplemented by land batteries at Southsea, to the eastward of the entrance to the Portsmouth Harbour; also at Gillicker, to the westward. These batteries would act in conjunction with the sea forts. On the other side, the approaches from the westward along the north of the Isle of Wight, are guarded by powerful batteries at the Needles and Hurst Castle, besides other works.

As regards the character of the sea-works we are indebted to the courtesy of the Fairbairn Engineering Company, the constructors of the iron framework of the two principal forts, for precise information. By the term framework the reader must understand the skeleton state and form of the forts, as distinguished from the armour with which they will be clothed hereafter, and the armament which they are intended to

carry. One of these structures is quite complete, and the first thing to notice about it is its extraordinary size. It covers a circle the diameter of which is 200 feet. The foundation prepared for it rises out of the sea to about 16 feet above high-water mark. From this platform the iron wall of the fort will ascend to a uniform height of 26 feet, and above this there will be a bomb-proof roof. When all is done, the vertical side, or wall, will present a blank face all round, varied by no features whatever save the noses of the guns, except at the entrance port, where the gun will be omitted. The holes for the guns to peep through will be the only openings (with that exception), each perhaps 4ft. by 3ft. All the rest of the wall—the whole exterior of the fort—will be dead armour plate, with the roof to crown it. This will be the ultimate aspect of the work, but in its present condition we have to deal with a comparatively open-looking structure, entirely roofless, and *minus* all the armour-plating with which it will be enclosed.

Until the plating is added, there will be seen only the huge upright piers, or supports; the floors, or decks, on which the guns will rest; and the vertical bars, somewhat stockade like in appearance, to which the outer armour will be attached. The fort will carry 49 guns, arranged in two tiers, the upper containing 25 and the lower 24. Accordingly, the framework has rather the look of a skeleton building in two stories. It might be compared to the structural outlines of an amphitheatre, but the interior must be pictured entirely clear of stages and everything else. The circumference has a gallery all the way round, at a height about midway between the ground floor platform and the roof beams. The floor and gallery represent the lower and upper stages for the guns. With these and their supports, and the armour to be added, the whole mass of ironwork is exclusively concerned. It is an empty circus, the architecture of which is all at the circumference. The appropriation of the interior space of the fort is a matter with which the constructors of the framework are not concerned. The circular fabric which they have put together is divided into bays, in each story, by the massive vertical piers, 25 in number. These divisions, along two lines (upper and lower) of 600 feet—which is the length of the circumference—afford ample space for a gun in each; and the piers are so shaped in their inner portion as to allow the free play of the gun on its swivel pivot.

As regards the details of the structure, the component parts to be noticed are mainly the three classes above-mentioned—the decks, or floors, for the guns; the vertical piers; and the massive upright bars for the armour. To take the piers first—they are composed of wrought-iron plates three-quarters of an inch thick. Their dimensions are about 13 feet 9 inches by 7 feet 6 inches, and 22 feet high. Their hollow insides will be filled with concrete. The upright supports for the armour—which we have compared to a stockade in their present appearance—are solid bars of wrought-iron, some measuring 12 inches by 8 inches, and the others 12 inches by 5 inches. These immense upright bars are repeated all the way round the outer rim of the structural circle, in the spaces

left between the piers, and they uniformly extend from top to bottom. These and the piers, therefore, with the armour to be added, constitute the wall of the fort. The next element for review is the composition of the two decks. Both the upper and lower will be formed of enormous wrought-iron beams, laid horizontally, the outer ends of which will be carried by the iron structure itself, and the inner ones by the buildings within the fort; the spaces between the beams will be covered in with half-inch wrought-iron arched-plates, well riveted to the beams, and filled in with concrete flush to the actual gun floor, which will be formed of timber planking, carried by these wrought-iron beams. There are also three horizontal external rings, one flush with the masonry and the other two at the levels of each deck as described, which are composed of solid wrought-iron plates 3 inches, 2 inches, and 1½ inches thick respectively, and form a most important element in the strength of the structure. All the materials are of the best and most costly description of armour-plate iron, and have been furnished by Messrs. Cammell and Co., of Sheffield. Many of these plates are 26 feet in length, and one of these alone would represent a cost of about 170*l.* sterling. Without inquiring the exact number of them in the whole of this stupendous array of ironwork, the example just given is enough to prepare one for the total estimate of the price, recollecting that the multitudinous ribs and bones of the fabric are knit together from floor to roof all along a circumference of 600 feet. The cost of the fabric alone of the two forts, one of which we are describing, is about 900,000*l.*, exclusive of the armament. The Horse Land and No Man's Land Forts correspond in all respects, except that the foundation for the latter has been rather the more costly of the two.

Before turning to the foundations, however, something must be said of the general character of this ironwork. All the military officers and professional authorities, who have inspected it, concur in pronouncing it superior to anything of the kind erected heretofore. The Fairbairn Engineering Company, in order to meet the requirements of the Government in this important undertaking, have incurred a large outlay in providing special machinery to facilitate the production of the two forts and works of similar magnitude. As may be supposed, a large space of ground has been entirely occupied by the erection of the first fort during the 14 months it has been constructing. As soon as it is removed, the same grounding will be occupied for a similar length of time with the second fort. A special workshop had to be fitted up for the work, and a great number of the best and newest of Whitworth's tools had to be provided, as much to insure the accuracy of the work and perfect adjustment of all its parts as to expedite its progress as much as possible. With the latter object, for instance, multiple drills were provided of the newest design, costing 500*l.* a piece, and each drilling 30 holes at a time—no superfluous speed, considering that the number of holes to be drilled, all in their exact places, is reckoned by millions. The edge of every plate throughout the structure



is planed, every hole has been drilled, and the edges of the iron were afterwards taken off by machinery, to prevent the force of a shot shearing the fastenings. All the plates had to be planed to the true circle outside. Before the artificers' work could be entered upon, the planning and marshalling of this bewildering multitude of details required long and careful labor. This has been effectually carried out by the Fairbairn Company's Engineer, Mr. H. M. Harman, C. E., in accordance with the general design of the work received from its authors at the War Office; and the precision with which everything was foreseen and calculated may be gathered from the fact that when the whole circle of iron-plating came to be put together, not a farthing of expense had to be incurred in correction, so perfect was the adjustment of every part. All this nicety and finish must seem more remarkable to non-professional eyes, looking at the unwieldy character of the materials employed. So exceptional was the severity of a great part of the manual labor involved in the actual combination of parts, that only the most powerful workmen were equal to the strain. As already indicated, these two iron sea forts will be the very first of the kind that the world has seen. As regards the strength of their framework for resisting attack, it is to be noted that being in the strictest sense homogeneous throughout, it has the great advantage that whenever a shot strikes it the force impact is taken on the entire structure, and not upon an isolated point.

The armour-plate casing round each fort will be formed of three thicknesses of 5-inch plates, having spaces of five inches between each, filled in with Portland cement concrete; but opposite to each gun there will be 17 inches thickness of armour-plates and 10 inches of concrete, the whole secured to the upright bars and the piers. Annexed are particulars of the 49 guns of the fort:—

Guns in Lower Tier:—Twenty-four 12-in. guns of 25 tons, throwing projectiles of 600lb., with a charge of 85lb. of new pebble powder. Initial velocity of shot about 1,300 feet per second, and total energy at muzzle 7,000 foot tons; at 800 yards, 6,000 foot tons. Palliser projectiles from this gun will, at 200 yards, pierce 14-in. of armour, and, at 1,000 yards, about 13-in.; at 2,000 yards, say, 12-in. Guns in Upper Tier:—Twenty-five 10-in., 18-ton guns, throwing projectiles of 400lb., with charge of 70lb. of pebble powder. Initial velocity about 1,360 feet per second. Total energy at muzzle upwards of 5,000 foot tons; at 800 yards, 4,400 foot tons. Palliser projectiles will pierce 12½-in. of armour at 200 yards; 11½-in. at 1,000 yards, and 10½-in. at 2,000 yards. Preparations are also made for five two-gun turrets on the top of the fort, if they should be found necessary hereafter. These turret guns would be of at least 25 tons. To these particulars may be added a few relating to the armament of the two smaller forts. The Spitbank Fort will be of one tier, and bomb-proof. Its armament will be nine 25-ton guns (as before described) in an iron battery, composed of a front made

up of four thicknesses of at least five-inch armour plates, resting against an iron skeleton structure. Three of the guns look seaward, and six guns of less weight in granite casemates look towards Portsmouth Harbour and the land. The total cost of this work will be about 180,000*l*. In the St. Helen's Fort the battery will comprise a large central turret containing two of the heaviest guns and two 10-in. 18-ton guns (such as above described), mounted on turn-tables behind iron walls. The estimated cost of this fort is 120,000*l*.

The works generally have been designed and carried out under the able direction of Colonel W. P. Drummond Jervois, C. B., R. E., who was also Secretary to the Royal Commission. The ironwork of the forts was designed by Lieutenant-Colonel Inglis, R. E., in which, as also in the control of the execution, he has been assisted by Lieutenant English, R. E. The whole of the ironwork of the two principal forts has been constructed and erected at the works of the Fairbairn Company at Manchester, and will be re-erected by them at the sites of the forts, under the superintendence of the Company's Engineer.

Immoveable as it looks, indestructible as it is designed to be, the immense fabric they have completed is about to be taken to pieces for conveyance to the south coast. The trip will, doubtless, be accomplished with that wonderful ease and celerity with which the railway æra has made us familiar. Engineers and traffic managers contemplate a feat of this kind with equanimity. The world in general accepts the performance much as if it were the transport of a toy palace from the dining-room to the nursery, remote as the work is from the thought of child's play. This skeleton fort is an affair of about 2,400 tons in weight, but far more impressive in its visible magnitude, and there seems something colossal in the bare idea of undoing the whole of it, and so packing it off "per rail."

The foundation on No Man's Land Shoal is, we believe, sufficiently advanced to receive the structure. The works, both there and on the Horse Sand Shoal, have proved very troublesome and costly operations, extending over many years. The sites ultimately selected for the four forts agree nearly with the recommendation of the Royal Commissioners of 1859, though one or two positions have had to be abandoned, owing to the difficulty of obtaining a secure foundation. For the Horse Sand Fort the foundation is laid on the shoal at a depth of 11 feet below low water spring tides. At the level of high water spring tides the masonry is 210 feet diameter. Up to a little above this level the entire base consists of massive concrete blocks, with granite and other stone walling on the outside. Upwards, to a level of about 16 feet above high water, an outside wall of granite and Portland stone of great thickness supports the magazines, shell rooms, and other stores. Upon this structure will stand the two-tiered circular iron fort.

Whether it be the one which has been described as finished or the one about to be begun is immaterial, since there is no difference in

their design. The formations of No Man's Land Fort and Spitbank Fort present no feature very distinct from that of the Horse Sand. At Spitbank the external diameter of the masonry at high water level is 151 feet. For the St. Helen's Fort the foundations were made by sinking a ring nearly circular, and about 130 feet external diameter, of iron caissons through the shoal into the clay below, excavating the sand inside the ring and filling in concrete. The granite-faced structure above high water level contains the magazines, shell rooms, &c.

What may be the permanent value of these works, in a military point of view, it is not the purpose of this article to discuss. The general scope of their design was indicated at the outset in order to set the competent reader thinking for himself, with the aid of such materials as we have been enabled to present, how far the immense interests to be protected will have been really placed beyond the reach of danger. How long may it be before some new development of the resources of attack reduces the apparent superiority of these vast and costly preparations for defence? The question will be asked by those who are unlearned in the subject, but not inexperienced in the course of events, and those who are at once the most learned and the most experienced will, doubtless, be prepared with an answer. The answer of the responsible authorities is, indeed, the works themselves, which would not have been persevered in without the most cogent reasons. Their design has undergone many changes since the time when no heavier gun was contemplated than the old smooth-bore 68-pounder. Mention has been made of "bomb-proof roofs," but, in point of fact, these sea forts are supposed to be beyond the practical need of any such protection from an enemy

There is no roof required for the interior of the circle, within which will be the barracks and storehouses of the fort. It is believed that no hostile fleet or vessel could come near enough under fire of the fort to get the requisite elevation for sending a shell over the roof of the circular gun tiers, or upon it. While so much can be said, the presumption will be that the iron guards of Spithead are as invincible as they look, and that the grand total of expenditure, when the account for each item is closed, will have been justified by what there is to show for it.



## II

**The Staff College.**

THE following regulations regarding the examination of officers who may be candidates for admission to the Staff College in February, 1873, have been issued from the Horse Guards:—

“1.—There will be vacancies for 20 officers, of whom three may belong to the Royal Artillery and two to the Royal Engineers, provided they are among the 20 highest on the list. The qualifications requisite for admission are:—(a.) A service of not less than five years previous to examination, exclusive of leave of absence. (This is not to apply to the usual leave of absence granted to officers.) (b.) A certificate from his commanding officer that the candidate is in every respect a thoroughly good regimental officer. (c.) A report in answer to the following questions regarding the character, habits, and disposition of the candidate, and his general qualifications for employment on the Staff. These questions are to be confidentially answered by a Board, consisting of the commanding officer and the two next senior officers of the candidate's regiment:—\*

“Questions.—Is his conduct marked by steadiness and prudence, and is he temperate in his habits? Is he extravagant in his mode of living? Does he display zeal, activity, and intelligence, as well as discretion in the performance of his duties, and does he appear to take an interest in his profession? Report any other characteristic of the officer which renders him suited or otherwise for the duties of a Staff officer. Is his disposition such as would enable him to perform those duties with tact and discrimination, in a manner calculated to insure their being cheerfully carried out by those to whom orders would be conveyed by him; or, are his manners and temper objectionable, and likely to cause him to disagree with those with whom he might be associated or be brought in contact? Is he active and energetic in his habits? Is he a good, fair, or indifferent rider, and is he shortsighted? (d.) A certificate that the candidate, if not a captain, has passed the examination for a troop or company. (e.) A medical certificate of good health and fitness for the active duties of the Staff. (f.) Every candidate before being admitted to the entrance examination will be attached for a month to the Staff of a general officer commanding a brigade or division, who at the expiration of this period will report confidentially upon the candidate's general fitness for Staff employment, and especially upon his aptitude for business and for conducting official correspondence. (See General Order 40 of 1871.) Every application to study at the Staff College must be made, while the officer making it is present and serving with

\* Officers on half-pay whose regiments have been disbanded are, if possible, to obtain answers to these questions from the three senior officers under whom they have most recently served.

his regiment, through the commanding officer. No application from an officer on leave will be entertained.

"2.—Home Stations. Officers serving in the United Kingdom who are desirous of entering the Staff College must inform their commanding officers before the 1st of May next, by whom the certificates from *a. to e.* will be prepared and forwarded, through the usual channel, to the Adjutant-General of the Army. General officers, in forwarding these applications, will record their opinions as to the fitness, or otherwise, of the applicants for Staff work, should they be able to do so from personal knowledge of them. If these certificates are satisfactory, orders will be issued for carrying out the test prescribed in paragraph *f.* General officers will report, not later than the 30th of June, upon the candidates then attached to their Staff; after which date the officers approved of by his Royal Highness will receive from the Director-General of Military Education the rules to be observed at their examination. The examination will be held in London on the 23rd of July next and following days."

"3.—Foreign Stations. General officers commanding abroad will issue their own local orders, specifying the date up to which applications will be received by them from officers wishing to be examined. Care should be taken that sufficient time is allowed for the qualification described in paragraph *f.* to be attained, so that all the necessary papers and certificates may be received at the Horse Guards on or before the 15th of May. General officers, in forwarding these applications, will record their opinions as to the fitness or otherwise of the applicants for Staff work, should they be able to do so from their personal knowledge of them. The examination papers will be sent out for those officers only whose applications shall have been thus received."

"4.—The examination will commence on the 23rd of July, or as soon after that date as the examination papers shall be received from the Director-General of Military Education; but no examination can be allowed to commence after the 15th of August. A Board of officers will be appointed at the most convenient Station of the district, by the general officer in command, and will consist of three officers, one of them to be, when practicable, a Staff officer, having the rank of field officer, and the other two, if possible, not under the rank of captain. One of these officers will belong to one of the scientific corps, when any such officer can be obtained. The questions are to be answered in presence of the Board. The Board will give to each candidate a number, which he will affix to each of his examination papers, instead of his name. He will retain the same number throughout the examination. The Board will give to each candidate a paper of the printed questions on each subject, at the time specified for the examination in that subject. The candidates will write their answers to the questions in the presence of the Board, and their papers, together with the printed examination questions, will be collected at the hour appointed, and made up into a packet, which will be sealed before being taken from the examination room."

The Board will immediately, on the conclusion of the examination, forward the papers of the candidates to the general officer commanding, for transmission to the Director-General of Military Education, accompanied by a certificate that the candidates obtained no assistance from books, or help, of any kind, in their examination. The Board will at the same time forward the names of the candidates, corresponding with their index numbers in the examination, in a separate envelope, for transmission to the Director-General of Military Education."

"5.—The following will be the order of the examination;—First Day.—Military drawing and Hindustani, three hours each. Second Day, Fortification, six hours. Third Day.—Mathematics (obligatory), six hours. Fourth Day.—Mathematics (voluntary), six hours. Fifth Day.—Military History and Geography, first and second papers, three hours each. Sixth Day.—French, three hours; Chemistry, three hours. Seventh Day.—German, three hours; Geology, three hours."

"6.—The examination in military history and geography will comprise the following subjects, as stated in General Order 75 of 1871, viz. :—(1) The Campaign of 1814 in France. Candidates will be expected to have a general knowledge of the geography of the country, that of Champagne in detail. (2) The general principles of war; text-books, Jomini, *L'Art de la Guerre*; Hamley, *Operations of War*."

"7.—There will be in all cases an interval of not less than one hour between the two periods of examination on each day. The papers will be collected at the appointed hours by a member of the Board. Any candidate, however, who may have finished his examination paper on any subject before the hour named, may deliver it into the hands of a member of the Board. Paper, pens, and ink will be provided, but candidates may bring their writing and drawing materials, instruments, &c., and also the tables of logarithms they are in the habit of using. No other books or notes of any description will be allowed to be used. No communication whatever will be allowed between the candidates at the examination."

"8.—General officers commanding at foreign stations will place no restrictions upon officers competing, further than the exigencies of the Service may absolutely require. It will be understood that the rule by which only one officer can be spared from a battalion at a time for the purpose of studying at the Staff College does not apply to candidates from battalions which have officers now at the Staff College, but whose course of study will terminate in December next."

"9.—General officers commanding at foreign stations will select the hours for the examination which are best suited to the climate and circumstances of the country, taking care, however, to conform strictly to the number and distribution of the hours as detailed in the foregoing regulations."

"10.—On the completion of the examinations, general officers commanding will transmit the candidates' papers to the Director-Ge-

neral of Military Education, War Office, Pallmall, with the least possible delay, in order to enable officers from distant stations, who may be successful in the competition, to join the College early in the following February. They will, at the same time, forward to the Adjutant-General a return of the officers examined. Candidates are recommended to obtain the reports of past examinations for admission, with copies of the examination papers, published by Messrs. Taylor and Francis, Red Lion Court, Fleet-street, London."

---



## III

**Practical Instruction for Staff Officers.**

The Field Marshal Commanding in Chief has approved the following course of instruction for officers who have passed through the Staff College when attached to the various arms of the Service, as stated in the regulations for the Staff College :—

**“Cavalry Officers attached to Infantry.**—Without wasting time on matters of detail, cavalry officers are to be well-informed as to battalion and brigade drill, and their attention will be particularly drawn to the following points :—The component parts of a company—battalion and brigade ; the definitions and terms used ; manner of seizing a company ; degrees of march ; relative proportion of paces to files, and the mode of calculating the number of paces required for a battalion of given strength, whether in column or line ; also for a brigade of given strength. The manner of inspecting a company or battalion on parade ; the mode of putting on the accoutrements and packing the valise ; alignments, points of formations, base points and markers ; formations best suited to different kinds of ground ; different modes of firing ; manner of skirmishing ; relative strength of skirmishers, supports, and reserves ; modes of posting sentries by day and night ; conduct of patrols ; positions best suited for pickets, relative strength of pickets, supports and reserves ; orders to be given to an officer in charge of a picket ; formation of advanced and rear guards on the road and in open country ; definitions and terms used in shelter trench exercise ; time taken in forming any given intrenchment. They are to acquire a general knowledge of the annual course of musketry, and to compare the interior system of an infantry with a cavalry regiment, and the rates of pay and messing.”

**“Cavalry and Infantry Officers attached to Artillery.**—They will be required to attend all parades, mounted or dismounted, of the brigade or battery to which they may be attached. They will accompany the orderly officer through the performance of his duty, so as to become acquainted with the mode of carrying on the duties in quarters. Infantry officers will attend mid-day stables daily, and stables on the return of the battery from the field. All will acquire a general knowledge of standing gun drill and the general principles of battery and brigade drill in the field. They will be on parade when ‘turn out’ sounds, and learn how to inspect a battery both on foot and when mounted. They will direct particular attention to the following points :—Nature of gun used by Horse Artillery and Field Batteries ; its construction, weight, and calibre. A general knowledge of the component parts of the gun-carriage, limber, and waggon. The different carriages belonging to a battery of Horse and Field Artillery, with their various uses ;

different kinds of projectiles used with Field Artillery. A knowledge of the different kinds of fuses, their uses, and mode of preparing and firing them. Ammunition, camp equipage, men's kits; number of rounds of ammunition carried per gun; total weight of gun and carriage, also waggon, when packed, in marching order. Fitting of collars, saddles, pads, breechings; length and direction of draught, weight carried by riding and hand horses, lead and wheel, in marching and drill order; fitting of horse appointments of non-commissioned officers and gunners, packing and putting on valises and cloaks, turning out in marching and drill order. Stable Management (Infantry officers only)—Shoeing (general principles), times of feeding, quantity of forage allowed per horse per day, watering, general duties of officers and non-commissioned officers. Average rate of marching of Horse and Field Artillery. Special duties of Horse Artillery in combination with cavalry, and Field Artillery with infantry. Position of artillery in the field, rules for taking up positions, the importance of cover for guns, their limber, and ammunition waggons; position of the latter with reference to the guns. The projectiles that may be used with the greatest effect against columns of troops, earthworks, over firm or marshy grounds, &c. Grounds occupied by a battery in line, at full, half, quarter, and close intervals. Distance between guns in line in open, half, quarter, and close intervals. Interval between batteries in line, in open, half distance, and close columns. How to dress guns when brigaded with other troops. Articles of clothing, necessities, and equipments supplied to men. Rates of pay and messing."

"Artillery and Infantry Officers attached to Cavalry.—Cavalry drill and field duties, a general acquaintance with regimental and brigade drill. Formations used in cavalry; general principles of field movements of cavalry; circumstances to which various formations and movements are best adapted; frontage, intervals, distances, and depth required for bodies of cavalry when formed on parade; inspections of regiments; parade movements ordinarily executed; points to be particularly noticed in the inspection of a cavalry regiment; general principles regulating the employment of cavalry in presence of an enemy; disposition of supports, reserves, &c., combined action of cavalry and artillery, duties of cavalry supporting artillery; duties in the field for which various kinds of cavalry are best adapted; employment of cavalry as skirmishers, mounted and dismounted; outpost duty, patrols, reconnoitering, and foraging parties; marches, ordinary rate of cavalry march; disposition of advance and rear guards, flankers, &c.; strength and formation of Royal and other escorts; employment of cavalry for baggage guards and convoys, mounted orderly duty, &c.; employment of cavalry in street fighting and riots; interior economy, organization, &c., of cavalry.—Classification of cavalry in the British service. Difference in arms, equipment, &c. Organization of a cavalry regiment; proportion of dismounted men, necessity for, and duties of the latter. Ordinary routine of daily duties, and of weekly and monthly inspec-

tions, or, in a cavalry regiment, so far as they differ from similar duties in other branches of the service. \*General acquaintance with stable duties and regulations regarding shoeing and management of horses. General acquaintance with the saddlery, equipment, kit, &c., of cavalry, the mode in which they are fitted and carried. Average weight carried by the horse. System of supply of clothing, necessaries, &c., so far as different from that in other branches of the service. Different 'orders' in which cavalry turn out for various kinds of parades. \*General acquaintance with the system of riding instruction, both as regards recruits and trained officers and men. Average time required to train young horses and recruits. \*Regulations regarding forage, issue, inspection and rejection of it. Regulations for the sword and lance competition, and for musketry practice in the cavalry service. \*Purchase and casting of horses. Grounds for which horses may be cast. Cavalry duties on a march, treatment of horses. Arrangements for the transport of dismounted men and light baggage. Regulations regarding billets, system of pay, &c., messing. In regard to the method of carrying out the instruction in the above subjects, the officers, if of infantry, will attend mid-day stables daily for a certain time, and more especially after field days, in order to acquaint themselves generally with stable duties, and to understand the amount of time taken up by those duties in the mounted service. They will also be present at riding drill for a certain time, in order to gain an insight into the system of instruction of both men and horse. These duties will not be required from officers of Artillery. All officers, however, will take orderly duty (as supernumeraries) a sufficient number of times to obtain a practical acquaintance with the nature of the duty, and more especially to enable them to understand the points in which such duties differ in different branches of the service. They will also be required to attend all adjutants' drills, whether mounted or on foot. At adjutants' drill they will be required, as soon as possible after joining, to learn the mode of placing bases, &c. At regimental field days they will accompany the commanding officer. At brigade and divisional field days they will, as far as possible, be employed with the Staff for the purpose of acquiring a practical acquaintance with Brigade-Major's duties in the field. Office Work.—To enable these officers to take up office duties without difficulty, they will attend at the orderly rooms, and also at the brigade office, three or four at a time, as may be arranged, and work under the Brigade Major till they have mastered the following subjects:—Registry of papers: mode of keeping office books, records, rosters, &c.; method of conducting correspondence; departments to which correspondence on various subjects is forwarded; subjects of correspondence with the Control Department; applications for routes; communication of orders to regiments; divisional and brigade standing and daily orders; practice in writing orders; returns, reports, &c., periodically required at brigade offices from regiments, and at superior offices from brigades;

---

\* Will not be required from Artillery Officers attached to Cavalry.

examination and checking of returns; courts-martial and Boards of various kinds; duties of Staff officers in regard to these subjects; business connected with applications for leave of absence, furloughs, passes, &c.; arrival and departure of regiments; duties of Staff officers in regard to these subjects; preparatory arrangements for flying columns; requisitions for camp equipment, transport, &c. Regulations in regard to the garrison military police, and the crimes of men taken up by them; inspections of regiments; routine to be followed in different branches of the service; returns, &c., required in connexion with inspections; books which have to be shown at inspections; a general acquaintance with War Office Circulars and General Orders to which frequent reference is required in the transaction of ordinary brigade-office business. General Subjects.—They will ascertain what are the methods of encamping and picketing; the camp equipment necessary for different arms of the service; mode of carrying it out; regulations for the march of brigades and divisions, and for the baggage trains of the same; embarkation and disembarkation of troops of all arms, both on ships and railways; special duties of Staff officers on these occasions; the placing of points for parades; noting especially the difference of the systems of keeping regimental books and records; the difference of the system in enforcing discipline, especially as regards tattoo, punishments, and meals; the time necessary for corps turning out, both in ordinary cases and when hurried; the time required to pass over a bridge or through a defile in ordinary formations; the necessary precautions to be observed by all arms in crossing pontoon bridges.

“No leave of absence will be granted, except from mid-day on Saturday till Sunday night, without the sanction of the general officer commanding the brigade, who is responsible that the officers are duly instructed. As it is essential for the efficient performance of their duties that Staff officers should be acquainted with the tone and feelings of the officers of all branches, no officer will be permitted to live out of mess while attached for instruction. At the expiration of the time during which an officer has been attached to a corps, the commanding officer will report to the general officer commanding the brigade—who will countersign the report—stating whether he has acquired the necessary information on the foregoing points.”

---

## IV

## Health of Sailors and Soldiers.

DR. T. GRAHAM BALFOUR, F. R. S., Deputy Inspector-General of Army Hospitals, and head of the statistical branch of the Army Medical Department, read on Tuesday evening, the 19th instant, before the Statistical Society, an interesting paper on the "Comparative Health of Seamen and Soldiers, as shown by the Naval and Military Statistical Reports." On comparing the infantry regiments in the United Kingdom between 1859 and 1868 with the naval force on the home station during the same period, the sickness in the navy, as measured by the admissions into hospital, appears to have been one-fifth, and, by the proportion constantly sick, 1·20 per 1,000 of the strength higher than in the army; and the deaths from all causes to have been ·48 per 1,000 higher; but the invaliding to have been about one per 1,000 lower. Excluding accidents and injuries, which are much more frequent in the navy than in the army, the admissions into hospital of sailors have been one-ninth higher; but the deaths have been ·70, and the invaliding on account of disease 2·28 per 1,000 of the strength higher among the soldiers. The difference in the rate of mortality may probably be to a great extent accounted for by the difference of age in the two services, the proportion of boys—at that age when mortality is at its *minimum*—being 10 per cent. of the force in the Navy, and a little above 3 per cent. in the Infantry. The excess of admissions in the navy has been chiefly in miasmatic diseases, particularly eruptive fevers, dysentery, and diarrhœa, sore-throat, and erysipelas, diseases of the respiratory and digestive systems, in boils, abscesses, ulcers, and in accidents; while in the army there has been an excess in ophthalmia, venereal diseases, and the group of unclassified diseases. The influence of diet in the causing among sailors of diseases of the digestive system and of the skin has frequently been observed. On the home station the admissions from dyspepsia in the navy were 37, and in the army 13 per 1,000. Colic, also, caused 10 admissions per 1,000 in the navy and three in the army. On the home station the navy enjoyed a marked exemption from tubercular diseases; the admissions from consumption were four, and the deaths ·40 per 1,000 of the strength lower than in the army. The invaliding for tubercular diseases was also one per 1,000 lower than in the army. On the Mediterranean station, however, tubercular diseases were rather more prevalent and fatal in the naval than in the military force, and the invaliding for these diseases from the former was more than thrice as high as from the latter. *Delirium tremens* and epilepsy appear a good deal more prevalent in the navy than in the army. Thirty-five years ago, when public attention was first thoroughly

directed to the consideration of the health of the army and of the means necessary to improve it, the mortality, so far as could be ascertained from the imperfect data, amounted to at least 3 per cent. annually; on the average of five years—1865-69—it was under  $1\frac{1}{4}$  per cent. Taking the strength of the army, exclusive of colonial corps, from the Army Estimates for 1871-72, as 184,000 non-commissioned officers and men, the difference in the mortality represents a saving of above 2,300 lives annually—a saving of no small importance, and representing, even at the lowest estimate of the cost of production of a trained soldier, a large sum of money, which would be necessary to replace these men. It must not, however, be supposed that this money value has been all realized in a reduction of expenditure—many of the improvements referred to have been effected by means of a large outlay; but even after making a very liberal deduction on this account, there will still remain a considerable pecuniary saving as a result of these measures. It should also be remembered that another consequence of this judicious expenditure has been to remove some of those objections to service in the army which rendered it unpopular, increased the difficulty (and consequently the expense) of recruiting, and deterred a better class of men from joining its ranks. In the discussion which followed Dr. Balfour's paper, Dr. Webster, Dr. Mackay, R.N., Dr. Mouat, Inspector-General Lawson, Mr. Rawlinson, and other members and visitors took part.—*Medical Times and Gazette*.

---

## TRANSLATIONS.

## I

**The Battle-Field of Sedan.***[A translation from the French.]*

DURING three long months France has undergone so many experiences, and been racked by such an agony of hope and fear, that taking up my pen, as I now do, to write of Sedan, I feel as if I were dealing with events long passed. It is true that our sorrow has not yet become tranquil, and in all true French hearts the open wound is still unstaunched; but, nevertheless, it is incumbent on us who were spectators of that catastrophe to say what they saw, and to furnish the materials upon which history shall form its verdict. I feel, moreover, as if I were only fulfilling the demands of justice in attesting to the character of our army, that army which was rather crushed than conquered, and to the stuff of which our soldiers showed themselves to be made in those terrible days. Full of ardour, habituated to victory, marching to fresh battle-fields proud in the memory of their past triumphs and confident of future achievements, it soon became their lot to discover that bravery is not at all times all in all; and that heroism is ineffectual when the direction of these hardy virtues is confided to inefficient leaders, and to a commander-in-chief alike irresolute, incapable, and sluggish. Even then, though realizing that they were victims, they knew how to do their duty. The encouragement of example and military skill, which were absent in their leaders, were replaced by the devotion of the soldier. If personal intrepidity and inherent pluck could have achieved a victory over an iron discipline and superiority of numbers, in spite of the incapacity of their chiefs, the day would have been theirs. Failing in this, they have given their blood, and their sacrifice of self, deny it who will, and their devotion to their country—in a word, the conviction of their nationality had found root in the souls of those humble and valiant ones. The following recital is sacred to the memory of the glorious vanquished. If it were not that out of those disasters a sentiment of fortitude is evoked, it might be asked by some who read these lines why a French pen should recall those heart-rending scenes. We need only to look the truth in the face to be assured of this. The very depth of the calamity demands that we should retrieve it. Far from sinking down smitten by the blow, will it not be the part of France to draw from it a lesson of that exalted bravery which alone can save her?

Macmahon's army defeated at Reischofen and at Wœrth, had fallen back on Châlons by Sarrebourg and Nancy, forgetting to destroy the tunnel at Saverne which would have delayed the enemy's progress for several days. Douay's division, to the command of which brave General Pellé had succeeded at Wissembourg, was driven back as far as Neuf-

chateau before it commenced to rally. It then re-occupied La Veuve and La Mourmelon, where it re-formed under great disadvantages, the gaps made in the ranks of Turco and Zouave being filled up by young recruits. It was a sad yet proud spectacle to see those of our soldiery, who, though decimated by the fire of the enemy, wasted by hardships, worn out by fatigue, their clothes in tatters, and many of them wounded, nevertheless shrank from the ambulances, and begged only to be led into action; among them also might be distinguished the cuirassiers with bandaged heads and battered and pierced cuirasses. The Gardes Mobiles of the Seine, who were encamped on the Chalky plain of Mourmelon, gazed with sympathy and respect on these men, who had escaped the bloody fights of the early days of August, and formed the imposing remains of the most intrepid army in the world—the old legendary army of Africa.

When it was seen that all these troops reinforced by detachments from Lyon and Belfort were being massed round Châlons, and were taking up their position on those plains and eminences which had for several years been the theatre of the education of French military strategy, where their camps of exercise had been formed, and which had been the scene of many a sham fight, no one doubted but that it was here that Macmahon intended to make his final effort. It would, indeed, have been the fittest and most auspicious spot for it, for it was here that France gained the day when the invading hordes of Attila were shattered. The white slopes of the 'Champagne' here formed an amphitheatre, from the crest of which our numerous artillery, re-organized, and of a total strength of 400 guns and seventy '*mitrailleuses*', could easily have crushed the enemy. There is not a man who could not well have believed that the fate of the war should have been decided on these plains once reeking with the blood of the Moor.

So thought the soldiers as they prepared for the struggle. Drawn up in order of battle, they seemed to await daily the attack of the enemy, who was advancing by forced marches up the valley of the Aube. It was reported that the Prussians had entered Troyes on the 18th August and had occupied Arcis. The sound of their cannon could be distinctly heard in the direction of Vitry. A portion of General de Failly's army was then in the act of abandoning Vitry, and was falling back on Macmahon. Grey with dust and haggard with fatigue, they marched across the plains of Châlons with hands playing and vociferously demanding battle and vengeance for Forbach. However disastrous had been the double defeat of that dark 6th of August, the spirit of hope had been re-born, and there was not a thought but to wipe out the stains with which the reverses of Spicheren and Freischwiller had blemished their standards. It was only some officers of inferior rank, who, at the risk of their lives, and sword in hand, had attempted by efforts of personal intrepidity to retrieve the incapacity of their generals: it was only these who shook their heads, and looked with apprehension to the future. They saw that the casualties in the



ranks had been so great that they no longer bore a just proportion to the men, and could therefore keep them in hand but imperfectly. They perceived that administrative feebleness was undermining the most unwavering fortitude and the most gallant heroism. Still they had no other thought than to do their duty. An entrenched position was occupied round Châlons, the Mobiles of the Seine were withdrawn to Paris, because it was considered that they were not sufficiently organized to take their place in a line of battle. Nightly shots were expected to be exchanged between the out-posts and the echelons of the Crown Prince of Prussia. One can imagine, then, what the feeling was in the army and among the inhabitants of Châlons, when they learnt that this field of battle, which was looked upon almost as classic ground, was to be abandoned, and that the army was to concentrate on Reims! In one day all the surplus provisions and '*material*' of the camp was burnt. By the orders of the Field Marshal all the forage which could not be carried off, all the barracks and the block-houses, which had for some years been erected at Mourmelon, were destroyed. So great was the haste with which this work of destruction was carried out, that even the oats and the straw were not saved, and from that time the cavalry at Reims were left in want.

It was evident that Reims was only a first step to some strategical point, probably either Grand Pré or Valmy. Frenchmen are such fatalists that already, as in the days of Dumouriez, we began to believe that the defiles of the Argonne would be a Thermopylæ for France. Every one thought that as we were abandoning a position with which we were so thoroughly familiar, and as it had been resolved to advance to the aid of Bazaine, who, despite his victory at Gravelotte, had been enclosed within the limits of the position he then held, it was a certainty that we should march straight to him by Verdun, Monheulle and Gorse, and a rumour gained ground that our advanced guard was already as far as Sainte Ménéchould.

This seemed the natural direction in which to operate to effect a junction with Bazaine, and to free the army of Metz which had fought at Mars-la-Tour, Rezonville and Saint-Privat. If our information was accurate there was every need for hurry. A Parisian Garde Mobile, who had made his way alone on horseback after traversing the Prussian lines, brought to the camp at Châlons the news that Bazaine's ammunition had already failed. Thirty wagons containing a million cartridges pushed on to Montmedy and destined for the Marshal, were detained there. A part of Prince Frederick Charles' army occupied Brecy, and was extending itself in the direction of the Belgian frontier. The success of a movement on Metz depended entirely on the rapidity of its execution. It was imperative to check the Crown Prince, who was marching up the valley of the Aube, and to bar his advance to Paris in our rear, or else by a rapid march to advance straight upon Frederick Charles and attack him in rear, while our troops shut up within Metz should engage him in front and fight it out to the death.

Days, even hours, under such circumstances, were as precious as ages, and hours flew by and days passed, and no decision was come to. At last, on the morning of the 23rd August, on a rainy cheerless day, the army of Châlons, 200,000 strong, under the command of Macmahon, left Reims in the bleak and chilly dawn. They marched but slowly in the rain and mud, the colors in their black covers, the ensigns of the ambulances soaked through clinging to the poles, and the mitrailleuses encased in their leathern coverings. Thus the army crawled along the roads, while the dreary sounds of the clocks of Notre Dame of Reims bade them a mournful adieu through the rain.

It was the universal opinion that we were marching on Varennes or Verdun. How was it possible to suspect that such a large force would, as if with all the pleasure in the world, deliberately involve itself in a difficult passage through the narrow space which was left unoccupied between the Prussian army and the Belgian frontier? To go there was to expose oneself to the most palpable dangers, from which extrication would be a most delicate task—and retreat impossible. In front was the enemy, and in rear the frontier. If we were beaten, we could not escape being forced back on to neutral territory, and there disarmed by the corps of observation posted in échelon from Namur to Arlon. An extraordinary strategical combination indeed, the perils of which were plain as daylight to the most ignorant without even the necessity of consulting a map! History will not be slow to suggest that some people, and especially the Emperor, had a sneaking partiality for a position where, in case of disaster, the frontier at any rate afforded an asylum. I did not follow the march of the army to the Ardennes. I quitted Reims when the Prince Imperial left for Réthel, by which three train loads of famished soldiers were left waiting in the station for several hours, and which occasioned the insubordination, disorder, and pillage of the bread wagons by the troops—a sad and painful episode, of which the public has been informed by the papers. The soldiers were exasperated. Their want of discipline was the fruits of the irresolution of their leaders. The army first marched on Réthel, and thence made in the direction of Stenay and Montmedy in the hope of forming a junction with the force at Metz by way of the Ardennes; but, it is scarcely necessary to repeat, the manœuvre was commenced too late. Prince Frederick Charles had, in anticipation of the movement, pushed forward a small corps of cavalry or infantry from Briey on Lony and Montmedy, which disturbed the district, made their appearance everywhere, occupied the villages, appeared and vanished, clung to the trail of our soldiers as if by scent, and by a scientific distribution of their forces always managed to concentrate when an engagement became imminent. On the other flank, the Crown Prince on arriving at Châlons retraced his steps, and marched in quest of our troops in hope of taking them in flank. This did not matter much, and if our generals had turned to advantage French *'élan'* they might have made good to the very uttermost the hours which had been wasted at Châlons; but a perusal of

the despatches of those days will show at a glance the inefficiency of our officers. Their incapacity attained tragically burlesque proportions. The Emperor searches for his army, gets uneasy, questions, fumbles; the Generals wanting in firmness know scarcely more than he does. Everything runs foul of everything as in a fog. It makes one wild to think of these hesitating faltering corps d'armée pitted against troops which were servilely carrying out a plan of campaign thoroughly well pre-considered, and against adversaries who fought as if they were the automatons of a master spirit.

The Grenadiers and Artillery of the Belgian Army were posted along their frontier, and watched the struggle which was being carried on almost under their very eyes with considerable anxiety. The Belgians were very much maligned by us before the war, because we were singularly ignorant of the state of their feelings. Belgium was by no means ill-disposed towards France. They were naturally enough uneasy at the designs and ambitious schemes of the man who was then at the head of affairs in this country, and thus, though they devoutly hoped for the defeat of the Emperor, they at the same time sympathised warmly and sincerely with France and the French. How often have we been affected—affected even to tears—by the marks of sympathy and touching kindness with which they greeted the French soldiers who had sought shelter in their territory. There was nothing feigned, nothing unreal in their conduct. The Walloon population, French in their language and in their associations, were unmistakably distressed when they heard the Prussian Artillery opening from the direction of Longwy. They hurried in crowds to the frontier, lent aid to the wounded, cheered and consoled them, treating them with the greatest care; while the Belgian Army, which, as I can bear witness, had become a little excited by the smell of powder and saltpetre which was wafted from France, more than once showed signs of that feverish restlessness which Dante calls the ‘infection of battle and strife.’

At Givet, where I was, they were busy fortifying the citadel, one of the strongest in the district: like another Gibraltar it was perched on the crest of a rugged hill, and rising to the clouds seemed to defy assault. But at Givet, as elsewhere, the Government had left the fortifications without guns, gun-carriages or ammunition. The Ardenneses of the neighbourhood hurried thither hoping to find a refuge in the fortalice, which, as it was as useless for defensive purposes as if it had been dismantled, it could not afford them. Parapets were thrown up in haste, the young men were drilled, and the embodied peasantry mounted guard in their blue smockfrocks over the cannon, which were manned by volunteer artillerymen. Meanwhile, the successes which we were said to be gaining over the Prussians at certain points were circulated, whispers of victories gained convulsed the little town. One could not help feeling moved at the eagerness with which the women and children, and the restless folk generally, seized upon these frail assurances: some affirmed

that the Prussians had been beaten at Buzancy,—others insisted that it had happened at Attigny. Some spoke vaguely of an engagement at Varennes, in which guns had been captured and the Uhlans defeated. One thing at least was certain, that some 'Franc tireurs' had set on fire the woods of Mont-Dieu, and 'les grands-armoises,' under cover of which the Prussians were formed, as they had been at Wissembourg and Forbach. In the middle of all these re-assuring reports, which each had accepted according to the measure of credulity every one is disposed to attach to news ardently desired, came intelligence of the actions at Beaumont, Mouzon and Carignan.

On the 30th of August General de Failly was at Beaumont, and with inconceivable neglect took so few precautions in the face of the enemy, of whose exact whereabouts he was ignorant, that Prussian bullets gave the first intimation of the presence of the foe, while our men were halted with their ranks in disorder between two lines of wagons which lay on the road, and were in a measure hampered by being between the requisition-carts and impedimenta of all sort. One can imagine the situation of an army attacked in such a dilemma, and fired upon at discretion. The wagons were the very reverse of a protection, for the horses either plunged or fell on both sides of the road, and the panic stricken peasants who were driving loosed the reins and fled. They were terribly in the way and heightened the confusion. Thus, at the crisis of a sudden attack, our soldiers, through the culpable neglect of their General, were standing 'pêle mèle' without any order of battle, and were half-beaten before they had a chance of being engaged. Still they fought. The enemy advanced in overpowering numbers, and attacked our comparatively weak corps with a complete corps d'armée. It was another instance of their system of crushing opposition by numerical superiority. It is no exaggeration to say that the men under General de Failly were as one to six. By the evening, in spite of their bravery, the battle was lost, but ultimate success was by no means compromised, for Macmahon had under cover of night reinforced de Failly very strongly from Carignan, and thus prevented the renewed attack on the fifth corps from becoming a rout.

The battle was certain to recommence in the morning, for the enemy were too wise to allow respite to our heroic but worn out and famished troops—for these French soldiers—it is hard to have to record it—were dying of hunger in the deserted French villages. The enemy, who were fully alive to the difficulties before them, redoubled impetuosity. After a day spent in fighting and a night without rest, they had still before them the prospect of a battle, while the only food they had was a sup of broth, or a mouthful of bread devoured on the line of march.

The battle of Carignan was as severe and more disastrous than that of Beaumont. Its result really decided the fate of the campaign, and the never-to-be-forgotten morrow was but the sequence of this stubborn struggle in which, perhaps, more than in any other engage-

ment of the war, the battle became a butchery, after a hand-to-hand encounter and an artillery duel. The enemy, decimated by our mitrailleuses, renewed the attack with furious courage. They paid with their blood for their victory. The crimsoned waters of the 'Chiers' were choked with German corpses. Under the fire of shell which set Carignan ablaze Macmahon recovered his military energy, and that heroism which had at Reischofen made him, if not a brilliant general, at least a right gallant soldier. Once more forced to yield ground to superior numbers, he abandoned Carignan after an intrepid defence, and though he retired a beaten general, he had at any rate the bitter consolation, that on the relinquished battle-field the Prussian and Bavarian dead cumbered the ground in thousands. That evening the Emperor, who was stupefied with the defeat, telegraphed to the Empress this amazing despatch, dated from Carignan :—"There has been to-day another engagement of no great importance. I was on horseback for a long time."

On the first of September, after the engagements of Petit Kemilly and Bagrilles, at dawn of a bright quiet morning, the slaughter which had lasted, through three days recommenced more horribly than ever. Macmahon, under cover of the guns of Sedan, extended his army along the right bank of the Meuse, and faced the Saxons and Wurtembergers who were posted at Kemilly under command of the Prince of Saxony. He was soon to have against him the whole strength of the Prussian Army, except the corps d'armée under Prince Frederick Charles, which was at that very moment employed in keeping in check the army of Metz, and was staggering under the weight of their onset. One can picture to oneself this corner of French territory overrun with its enemies, bristling with German soldiery. On the hills which enclose Sedan, and form a large tunnel-shaped circle round it within which the citadel nestles, our troops exhausted, harassed, embittered, without any confidence in their chiefs, with no hope even left, and with no other incitement to gallant behaviour than the fierce surly rage of the beaten soldier—our troops, I say, were disorganized, and through their ranks were bandied bitter jests of veiled meaning levelled against their generals. These soldiers who had been accustomed to form line of battle and charge with bayonets lowered, and to the sound of music, were now to attack no more: for three days they had been on the defensive. It was to be their portion still.

The corps of the Prince of Saxony occupied the centre of the enemy's position. On the right from Bréville to Poaru were the Bavarians, who had just burnt Bazeilles, and were being massed and reinforced by the Prussian Royal Guard. It was evidently these who were destined for the attack. When morning broke they threw out skirmishers, and opened a heavy fire on La Moucelle; then they attempted to take the place with a rush at the point of the bayonet, this time without cover of any kind. They gained the streets of the village, but were repulsed by our men. They were hurled back; rallied, and

came on a second time. The position of LaMoucelle was to be held at any price, for it was to the Prussians the key of the battle-ground. To the Bavarians had been assigned the post of honor and the post of danger. House by house they struggled for its possession, and street by street they stormed the barricades. It was a fight to the death, and the slaughtered Bavarians fell in heaps in the main street. They were mowed down by grape, until the dead were kept erect by the support of the masses which had fallen before, so thick were the slain. At the same time the Royal Guard attacked Douzy and Rubecourt, both little villages which nestled in the forest of the Ardennes, white, smiling, and as if set in a green casket, but where death—death fierce and remorseless, was busy. From dawn to eleven o'clock our soldiers resisted gallantly, and repelled the onslaught of Pomeranian Grenadiers and Munich Chasseurs. But while our people were keeping these at bay with the courage of despair, and the enemy was shattering its ranks fruitlessly, another Prussian army still, more numerous, by a singularly well-conceived and daring march, with long swinging gait, made its appearance on the field of battle. It was the army that had been victorious at Wessembourg and Wœrth.

It was the army of the Crown Prince, the army which Macmahon had been waiting for at Châlons, but which when it debouched on Mourmelon, and found our smouldering barrack-ruins, without taking any repose, at once determined it go in search of the enemy it had failed to meet, and setting off at top speed by double marches, by this bold feat emulated the famous flank march which so wearied the Prussian army, but which won the victory of Sadowa. For two days its approach had been expected. The King attacked, certain that the Crown Prince would arrive on the day calculated on. He must certainly have heard the guns of Carignan. From the night of the 30th August to the 1st September, he re-doubled his efforts, and his army marching from Châlons by way of Vouziers, crossed the Meuse at Douchery at the same moment that the Bavarians attacked La Moucelle, and the Prince of Saxony opened fire. Since then the Crown Prince had been bringing his corps into line. He did more; he extended his flank rapidly along the Meuse. At the same that he took up his position on the bank of the river he pushed forward a corps, which, conforming to the formation of the battle-field, fell on Floing and Givonne, while the cavalry under the command of Prince Albrecht, the brother of the King of Prussia, penetrated the forest of the Ardennes, and the Uhlans, hussars and dragoons, being deployed from Flégneux to Pourn-aux-Bois, waited in concealment under cover of the woods, ready to cut off the retreat of our soldiers, who were now attacked on three sides.

Up till 11 o'clock our troops defended La Moucelle and the plain of Bazeilles most gallantly, and with deadly effect on the enemy. As we have seen, they forced the Grenadiers of the Royal guard to retire before them at Kubecourt, they kept in check, and were on the point of hurling back and defeating the immense masses of Prussians, Saxons

Baden-men, and Wurtemburghers—one might say, in point of fact, all Germany—opposed to them, when at 11 o'clock the artillery of Prince Fritz opened a sharp fire on Floring and Givonne, and bombarded our bewildered troops from a distance, bewildered alike by the unexpected cannonade, and by the appearance of a new enemy in still greater force than the first. Everywhere thronged the black masses of the Prussians—uttering wild 'hurrahs,' brandishing their rifles, and attacking on front on flank, on all sides. Our incomparable army yields not yet, still fights on, still hopes.

Hours elapsed in this stern and heroic resistance, but every hour the circle of fire became more and more deadly, more and more vigorous, and enclosed our brave soldiers. Death stalks everywhere. The Prussian artillery with its tremendous range takes up position on all commanding points. The balls hail on the French ranks from an almost invisible enemy. These threw themselves at the point of the bayonet up the hill slopes from whence comes the shower of death. The artillery fire smites them down before they can reach the gunners. Eleven hundred pieces of cannon thunder at once from far on our warriors—our warriors who love to fight with steel. Around them swarm three hundred thousand men, who drive them back and shoot them down, under cover of the woods or from the crest of the hill slopes. Then it was that the army—the unhappy French army,—before that girdle of iron, of fire, of cannon-balls and rifle-balls, recoils, retires, and buries itself within the funnel of Sedan, while from the bristling heights the batteries still roar.

At first our soldiers attempted to pierce and bore through the Prussian lines; they attempted to escape and to work their way out by La Chapelle, by the woods of the Ardennes, and by the open route to Belgium; but the cavalry, the hussars of Death, plunged into the woods, drove them back or sabred them. Driven out of the forests they made for Sedan, while from the crests of the hills of Givonne the Prussian batteries rained their iron-storm on the roads, and lopped off branches, and smote down men. Before these over-powering numbers, before these thousands of cannon, before this terrific development of brute force, our troops, with the spirit of resistance still alive in them, still prepared to defend their colours and their existence against the masses of the enemy; but crushed and reduced to impotence, fell back, and leaving their dead, generals, officers and soldiers, on the hill-sides of the Ardennes, plunged within the walls of Sedan, now so sadly notorious.

R. G. L.

E

M.

W.

Fr

mi

tu

we

th

fr

sa

su

mo

tu

we

th

fr

sa

su

mo

tu

we

th

fr

sa

su

mo

tu

we

th

fr

sa

su



## II

## Extract from the Prussian "Militär Wochenblatt," a remarkable article on the proposed reorganization of the French Army.

---

"General conscription is about to be introduced into France. M. Thiers having arrived at a determination on this important head, we are at liberty to utter an opinion on the probable results of the measure. Whatever we may say now can no longer be trumped up against us. France is convinced she requires general conscription to recover her military and political *prestige*, but can she imitate our military institutions without transferring to her soil our political and social organization as well? There are few people in Paris intelligent enough to realize the truth that the two things must go together. The warning they utter is drowned in the deafening cry for *révanche*. Generally speaking, public opinion in France is convinced that if there are any dangers connected with universal conscription the nation is strong enough to resist their baneful effect until vengeance has been wreaked upon *les Prussiens*. Fortunately we are in a position to judge the question more calmly than our excitable neighbours, and can avail ourselves of the long and instructive experience we have had in the working of our military system. As it is sixty years since universal conscription was adopted in Prussia, the following remarks may claim to be based upon the solid foundation of lengthened and thoroughly tested practice.

"The military institutions of a State ought to be adapted not only to its political needs, but also to the nature and character of its society. If one or the other of these requirements is disregarded, chronic or acute disease is sure to punish the neglect.

"The French possess qualities highly valuable from a military point of view. They have a good deal of intellectual vivacity, are susceptible of generous impulses, and in their paroxysms of enthusiasm esteem life but lightly. To the intensity of these qualities, in some periods of their history, they owe their success. To counterbalance the advantage they derive from their inflammable temperament, they are utterly deficient in steadiness. Hurried on by enthusiasm they advance, but the moment a repulse occurs a panic sets in, the glorious army is metamorphosed into a grumbling mob, and a great captain idolized but yesterday is to-day branded as a fool and a traitor. It is too much to expect of a Frenchman that he should be content to do his duty quietly and noiselessly, and disinterestedly follow up a distant aim, which, if promising success at all, is sure not to bring his name into particular prominence. French troops find it difficult to bear defeat, and are unwilling to wrestle with fortune, if she has once declared against them. No Parisian regiments would have marched from Ligny to Waterloo as did Blücher with his Brandenburg, Silesian, and Pomeranian troops. Of course the

inhabitants of Northern France are somewhat more solid and enduring than the people of her Southern provinces ; but the difference is too small to alter the general result and really affect the tone of the army.

“ Is such a nation likely to renovate itself by the adoption of universal conscription ? We doubt it. Universal conscription to work well requires moral earnestness in all classes of a nation. It requires the faculty of self-denial and a willingness to accept unpalatable conclusions when based upon premises acknowledged as necessary and just. Up to a recent date the French army was chiefly recruited from the labouring populations of the villages and small towns. The volunteers and substitutes belonged almost entirely to this class of rural or semi-rural labourers ; and as Alsace and Lorraine have always been the most martial dependencies of French, it was only natural that a disproportionately large number of those who served without compulsory obligation should have proceeded from these outlying parts. As to the working men of the larger towns who entered the army, they were too few and too carefully distributed over the various regiments to exercise any very sensible influence upon the tone of the troops. Universal conscription will change all this. Henceforth the more intelligent and well-to-do classes will form a strong ingredient of the line as well as the reserve. Substitutes will disappear, and a more comprehensive enlistment will place large numbers of working men side by side with the peasantry. Another inevitable consequence will be the abridgment of the term of service and an extension of furloughs far beyond what has been hitherto the case. Taking these innovations together, we are justified in anticipating that the French army will become something very different from what we have been accustomed hitherto to understand by the term.

“ In the first place, it must be taken into consideration that universal conscription in these modern days is a much heavier burden than it was at the time of its introduction into Prussia sixty years ago. Time and labour have immensely increased in value since the beginning of this century. It is true that unskilled labourers, if they get a really good military education, have so many indispensable virtues fostered in them as to be amply indemnified for the loss of time and wages sustained while under arms ; but those who devote themselves to commerce and industry, or science and art, will never be able in these pushing times to make up for the loss of a year or two spent in rank and file. In Germany we obviate the irksomeness of military duty by making people serve in their native towns or provinces, and granting them liberal furloughs if their personal circumstances seem to demand it. But will the French Government dare to keep recruits in their native towns, and permit them to attend to their domestic business several hours in the day, whenever they can be spared from duty ? Will garrisons be stationed in University towns for the express purpose of giving students an opportunity of acquitting themselves of their military obligations without interrupting their studies ? No French

Government can afford to accord these privileges. The Paris garrison have just been forbidden to accept volunteers from the capital, and, which is a more general measure, to protect the troops from the demoralising influence of the population, a large portion of the standing army is to be stationed in permanent camps. It is hardly too much to say that to introduce universal conscription in a country where such precautions are necessary is an absurdity. In Germany, although the principle of universal conscription has sunk deep into the heart of the people, and is highly prized by the nation at large, to propose measures such as are now contemplated by the French Government would raise an outcry throughout the land. Are the French more willing to undergo the additional hardships devised for them by their Government than the Germans? Are French recruits, taken from all classes, really disposed to divorce themselves entirely from all intercourse with civilians? We do not think that those classes hitherto exempt from the conscription will be found to possess the self-denial requisite to endure these privations; and even if these were not so, even if the educated classes of France were less luxurious and selfish than they are, we should doubt whether their joining the army would add to the military strength of the country. However much the army may be benefited by the smart intelligence of the cultivated Gaul, those strata of society blessed with this precious boon are the very classes in which the sense of duty and self-abnegation is all but extinct, and vanity and selfishness are paramount. Intelligence without strict morality, in our opinion, is more likely to poison the army than to ennoble it. And while this new dangerous element is added to the military *cadres*, while, to make bad worse, the Communistic population of the large cities are likewise draughted into the army, the term of service is shortened by several years, and the substitutes, so long the most reliable ingredient of the rank and file, are being done away with entirely and at a moment's notice.

“After what we have said it is superfluous to remark that the discipline of the army will not be improved by these rash innovations, and that in domestic complications in the future it will be even less reliable than it was. If for many years past no French Government could depend on the fidelity of their troops in a political crisis, but many Administrations were, on the contrary, subverted by those who ought to have been their military guardians—if, we say, these untoward incidents have shown themselves before the introduction of universal conscription, what will it be hereafter? A Frenchman is easily carried away by the impressions of the moment, and the many revolutions that have visited the country during the last eighty years, have too grievously impaired the sense of duty and fidelity which formerly pervaded the nation to have left the feelings and discipline of the army uncontaminated. By universal conscription this political poison, which has hitherto been doled out to the army in small doses only, will now be communicated to every battalion, and infect the whole body with the terrible gangrene. We

shall soon see all parties vie with each other in gaining the favour of the army ; and as all will have their representatives in the ranks, all may hope to succeed to some extent. If the standing forces are sure to be demoralized in consequence of these, the large number on furlough under the new system will be even more liable to the deleterious influences inseparable from party strife in a revolutionary country.

“The only resistance that can be offered to these evils must proceed from the officers. In a country where universal conscription prevails, military officers occupy a very different position from that held by their equals in rank in other lands. In such a country military officers are the teachers, the educators of the entire nation. All young men pass through their hands. All have to be taught not only to fire a rifle and to move in squads, but also to behave respectfully to their superiors, and to acknowledge the necessity of orders and obedience in executing a common purpose. Again, while the rank and file are constantly changing, the officers are the only stable element in an army of this description. They are the only element permanent in the regiments, the only ingredient in the military system capable of handing down the tradition of soldierly virtue and inspiring memories. They are the only basis on which discipline and a martial spirit can be built up. The impression produced by their behaviour upon the private must be strong enough not only to render discipline an easy yoke during his time of service, but also to last through the many years he continues in the reserve. Unless the effect produced upon the soldier by the bearing of his regimental officers be deep enough not to be erased in after life, the country, if obliged to call out the reserve, cannot depend upon the citizen warriors, to whom its safety is mainly intrusted. It is only if a soldier on furlough remembers the experience of active service sufficiently well to preserve in civil life the orderly habits he has acquired while under arms, that he will be an efficient man when called in, and also teach his children and neighbours how to serve the country in a methodical and patriotic way. To educate the rank and file for this national object is the task imposed upon military officers under the rule of universal conscription. To fulfil it requires no little knowledge, character, and sense of duty. If a man is to educate a fresh batch of recruits year after year, he must have an earnest mind and a devotion to the service, which few French officers have hitherto shown. Our officers have long realized the truth, that to maintain their authority, their culture must be equal to that of the most educated portion of the rank and file, and the discharge of their military duties so punctual as to command the respect of each and all. To perfect their military acquirements and give an example of moral conduct, therefore, became a necessity of their position. They could not have held their own without this. With this arduous course of life we will not compare the ordinary career of a French officer ; but that it was a widely different thing will not be denied. A large proportion of French officers were men without any general culture, men who had risen from the ranks, without any merit but that

of possessing a certain routine of the most elementary kind. In the present tone of the French mind, it would be dangerous to do away with this questionable kind of promotion, even if the necessary number of educated men could be found to fill up vacancies. Under any circumstances, it will be absolutely impossible to organize a body of officers which shall be welded into a compact whole by a due appreciation of military and patriotic duty, and which shall brave the obstructive influences of party life with the shield of personal and knightly honour. The formation of such a body of officers can be the result only of long and inspiring traditions in a monarchical State. It cannot be accomplished without many a successive generation of cadets being imbued with the same unswerving spirit, by a strong and uniform will; it cannot be accomplished without the recollection of the past linking itself in an unbroken chain with the experience of the present.

"Ever since a Prussian army has risen into existence, its officers have known no policy except that of uncompromising devotion to the King. To him who is raised above all our eyes have been ever directed. With our officers, faithfulness to the King and patriotism have been always one and the same thing. Honour has been identified with duty and national pride with strict performance of personal obligations. At the time universal conscription was introduced this feeling had attained an intensity which no outward circumstances could diminish. Thus universal conscription has been the making of Prussia, and through Prussia of Germany.

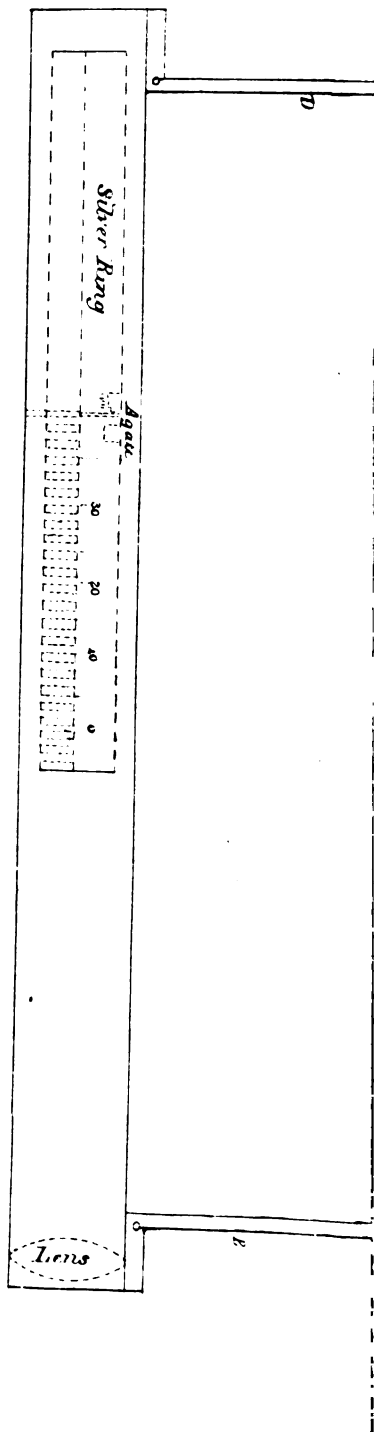
"But what oath is sacred in France? Is the French officer to consider himself bound by the solemn promise he has given to the Orleans? Or does his sword belong to Louis Napoleon or to M. Thiers, or to M. Gambetta? Where in France is the strong hand that has educated and formed a body of officers capable of keeping the army together? And if a French General told us but the other day that in France patriotism makes up for all other wants, we beg to enquire what patriotism means in such a country? Is he the greatest patriot who subverts a Republic, or he who supports it? Does patriotism enjoin a man to lead back the Emperor, to reinstate Henry V., or, perhaps, to set up the Comte de Paris? Without unity of purpose, without intellectual power and moral strength, the French officers will never exercise such an influence over an army based upon universal conscription, as to restrain passions and inculcate those primary virtues of military obedience and cohesion without which an army is a peril rather than a blessing to any State.

"Universal conscription, such as we have it in Germany, can be beneficial only in States where the social machinery can bear rough wear and tear, and has stood the test of many a rude shock. But whoever introduces our military system into a land undermined by political factions runs the risk of breeding civil war. As the French, by their constant clamour for revenge, force us to note the weak points in their armour, we cannot but be gratified by the introduction of universal conscription by our unruly neighbours."

---







SKETCH TO ACCOMPANY CAPTAIN J. M. TROTTER'S LETTER No. 1  
(CORRESPONDENCE) IN No. V.

Litho. at the Survr. Genl's. Office. Cal. March 1872



## CORRESPONDENCE.

## I.

**Sketch of a Surveying Compass.**

TO THE SECRETARY OF THE UNITED SERVICE  
INSTITUTION OF INDIA.

Sir,—The accompanying is a sketch of a Surveying Compass which I have recently had constructed by an instrument maker in Edinburgh, from a French pattern, which although extensively used by military surveyors on the continent, and considered by them an improvement on the Prismatic Compass, is not, I think, generally known in our service. Its construction is so simple that it is hardly necessary to supplement the sketch with a written description. The magnet which is 4 inches in length is attached to a graduated silver ring revolving on a pivot, and is contained in a case of the shape shewn in the sketch, made throughout of thin beaten silver, with the exception of a small portion (A C) which is occupied by a plate of of horn, or similar transparent material, somewhat smaller than the glass in Hutchinson's Prismatic Compass.

The instrument which I am describing is lighter than any Prismatic Compass with magnet of the same length, and has obviously the advantage of being stronger and less liable to injury than the compass in general use.

In taking a bearing the instrument held at a distance of from a foot to eighteen inches from the eye is directed on the object in the usual manner by means of the slit B, and the hair in the sight vane at D. The bearing is then read through then lens E. F. The figures on the graduated ring as seen through the lens appear larger and are more easily read than those of a Prismatic Compass, and the position of the hand, at half arms length, will I think be found more favorable to steady observation than that necessitated by an instrument which has to be applied closely to the eye.

I am, Sir,

Yours obedient Servant,

J. M. TROTTER, CAPTAIN,  
*Bengal Infantry.*

## **Books wanted to purchase.**

THE BRITISH INDIAN MILITARY REPOSITORY, edited by Captain S. Parlby, Bengal Artillery, Vol. V. and following Vols. c Nos. 8vo. 1826.

THE EAST INDIA MILITARY CALENDAR, 3 or more vol 4 to, published about 1832-35.

DODWELL AND MILES "ARMY LIST," of the three India Armies, large 8vo., date unknown.

JAMES' MILITARY DICTIONARY, thick, 8vo., date unknown

MULLER'S SCIENCE OF WAR, 3 vols. 8vo., date unknown.

WELSH'S MILITARY REMINISCENCES, 2 or 3 vols? 8vo date unknown.

MEMOIRS OF GENERAL SIR R. GILLESPIE, 1 vol., 8vo.

MEMOIRS OF JOHN SHUPP 3 vols., 8vo.

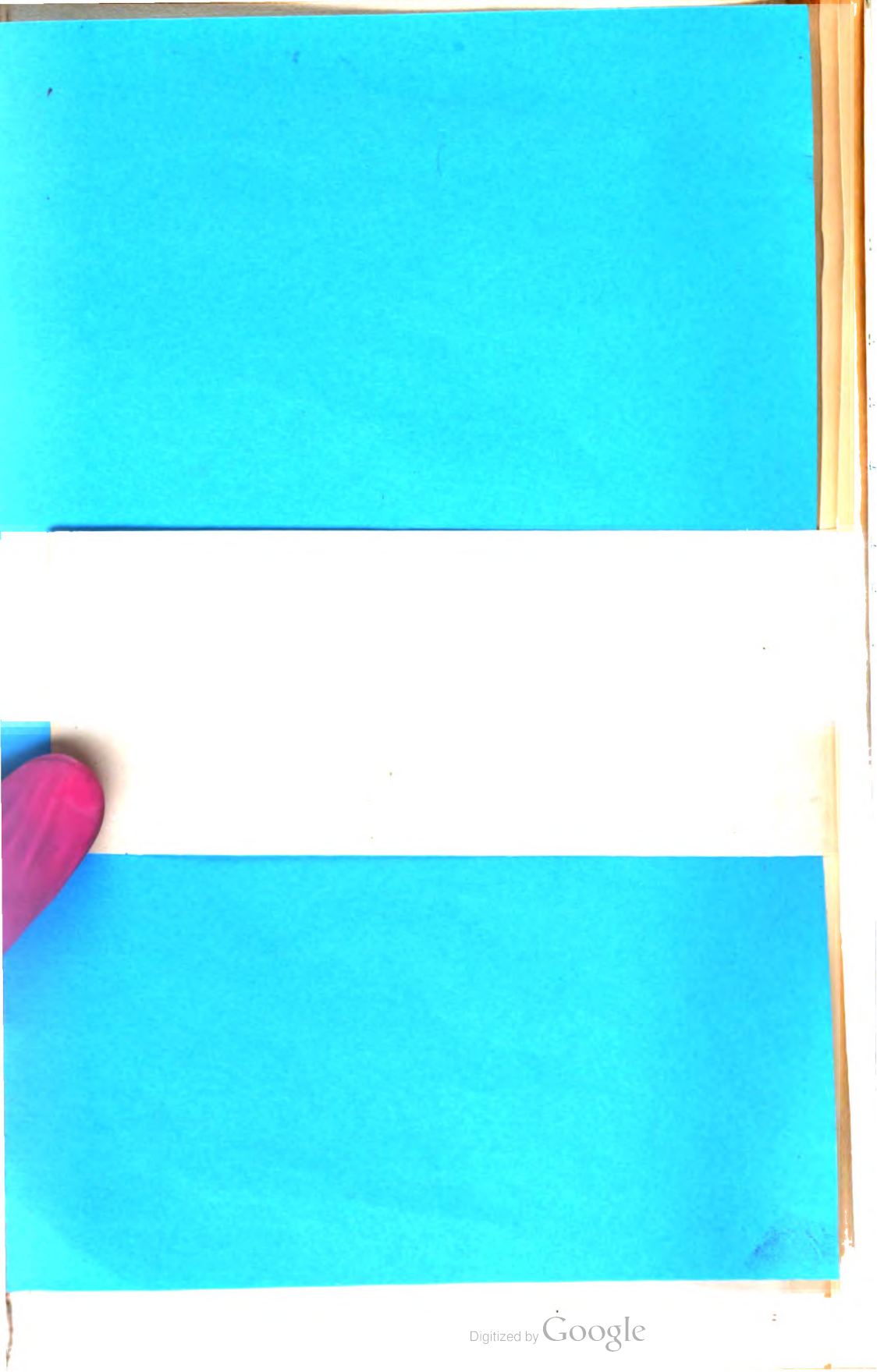
*Particulars of Price, Conditions, &c., to be sent to the SECRETARY  
United Service Institution of India, at Simla.*

## ERRATUM.

By a mistake of the Printer's the name of Lieut.-Col. H. Beville, C.B., Commanding 1st Belooch Regiment was erroneously printed W. Blake on page 123 of our last number.

JOHN BAILLIE, LIEUT.-COL.,

*Secy. U. S. I. of India.*



## NOTICES.

1. It is earnestly requested that Members of the Institution, who have not already paid their donation and subscription for 1872, will do so at their earliest convenience. Officers who may wish to become Members, are requested to be kind enough to forward their donations and subscriptions at the same time as they express a wish to join the Institution.
- 2.—Members changing their residence are requested to give early intimation of the same to the Secretary at Simla, and also to the Corresponding Members (if any) of the Station they are leaving and going to.
- 3.—Members going to England are requested to give an address in India where their Journal may be sent, and to note that their subscription is due on the 1st May in each year.
- 4.—Members are invited to become Corresponding Members at the different Stations. The duties of this office will be to collect subscriptions, forward papers, arrange about lectures and debates, and to communicate on general matters with the Council.
- 5.—The attention of those who intend to contribute to the Journal is called to the Rules on the subject.
- 6.—Members who may be willing to give their services for the translation of papers on Military subjects from foreign languages, are requested to communicate with the Secretary naming the language which they offer to translate.
- 7.—The attention of those who are working out inventions of Military importance is called to the opportunity afforded by the Journal of the Institution of making their ideas known. All inventions forwarded for publication (subject to the approval of the Council) will be carefully illustrated and described.

The following is published for general information :—

### **Revised Regulations of the United Service Institution of India.**

- I.—The Institution shall be named “The United Service Institution of India.
- II.—The design of the Institution shall be the promotion of Naval and Military Art, Science and Literature.
- III.—The proceedings of the Institution will embrace—
  1. The delivery of lectures at any station in India.
  2. Debates on Military subjects at any station in India.
  3. The publication of a journal, as often as practicable, containing (when procurable) matters arranged in the following order :—
    - (a) Original papers on Military subjects which the author is unable or unwilling to deliver in the form of a lecture.
    - (b) Reports of lectures with the discussion thereon.
    - (c) Reports of debates with the discussion thereon.
    - (d) Opinions of Members on matters published in former numbers.
    - (e) Selections from the records of the Military Departments of India (by authority).

- (j) Translations from foreign works of Military interest selected by the Council or sent by Members.
- (g) Short notes on professional subjects.
- (h) Notices of inventions of Military importance.
- (i) Correspondence on professional subjects.

V.—Composition—

1. The following shall be solicited to be Patron and Vice-Patrons respectively ex-officio :—

PATRON : .

His Excellency the Viceroy and Governor-General of India.

VICE-PATRONS :

His Excellency the Commander-in-Chief in India.

“ “ of Madras.

“ “ of Bombay.

“ “ of Royal Navy on the Indian Station.

2. Besides the above, Vice-Patrons shall be limited to members of the Royal Family, Officers distinguished for their services, and Members who have been benefactors to the Institution.
3. All Officers of the Royal Navy and Army and of Volunteer Corps in India shall be entitled to become Members on payment of the entrance fee and annual subscription.
4. Gentlemen, not included above, may become Members on the recommendation of two Members of the Institution, and with the approval of the Council.
- V.—1. The Government of the Institution shall be vested in a Council at the Head-Quarters of the Army in India, to consist of not less than 12 Members or more than 24, to be, as generally as possible, representative of all branches of the Forces in India. The names of Officers, willing to serve on the Council for each ensuing year, shall be published at least one month before the election, and all Members of the Institution, unable to attend, may record their votes for the Council by proxy.
2. One half of the Members of the Council shall go out annually by rotation, but all shall be eligible for re-election. Vacancies, occurring otherwise than by rotation, to be filled up provisionally by the Council.
3. Four Members of the Council will form a quorum, and the Senior Member will preside.
4. Officers will be invited to become Corresponding Members, to forward the objects of the Institution, and to communicate with the Council.
5. A Secretary shall be elected by the Council at the Head-Quarters of the Army in India for the purpose of (under the orders of the Council) keeping the accounts, editing the journal, and conducting correspondence, &c.
6. The duties of the Council shall be to exercise a general control over the welfare and expenditure of the Institution, and to pass papers for publication.
7. The Council shall frame such bye-laws, for the general conduct of the Institution, as may appear to them necessary, subject to confirmation by Members of the Institution at the next General Meeting.
8. The accounts of the Institution shall be circulated annually for general information.
9. Non-Commissioned Officers and Soldiers of the Army and Volunteer Corps shall, when practicable, be permitted to attend meetings to hear lectures, &c., and the introduction of a member shall be sufficient to admit non-subscribers for the same purpose.

10. Secretaries of Serjeant's Messes and of Regimental Libraries and Reading Rooms can obtain the Journal of the Institution by paying in advance the amount of the annual subscription for each copy required.

VI.—An entrance fee of Rupees 5 shall be paid by Members on joining, and an annual subscription of Rupees 5 shall be paid in advance by the 1st of May each year.

---

## BYE-LAWS.

---

### Rules for Contributors to the Journal of the United Service Institution of India.

1. All papers must be written in a clear, legible hand, and only on one side of the paper.\* All plans must have a scale on them.
2. Contributors may write anonymously, if they prefer to do so.
3. Unless the author expressly states at the end of his paper that he wishes it published complete or not at all, the Council will make such alterations in it as they deem necessary.
4. The Council do not undertake to authorise the publication of such papers as are passed, in the order which they may have been received.
5. Papers will be published, if passed by any four of the Council.
6. Contributors will be supplied with a few copies of their papers, provided they apply for the same before it is in the Press.
7. Contributors are requested, in future, to append a 'nom de plume' to their papers, in order that they may be communicated with in the "Answers to Contributors."

---

### Rules for the Regulations of Meetings and Debates of the United Service Institution of India.

1. The subject of all lectures and debates must be submitted for the sanction of at least four members of the Council before they are held.
2. The Senior Member present, being an Officer of the Navy or Army, shall always officiate as Chairman at Meetings.
3. Speakers are requested to address their remarks to the Chairman, and not to the Meeting.
4. In the event of more than one Member rising to speak at the same time, the Chairman's decision as to who shall be heard first shall be final.
5. If called upon to do so by the Chairman, a speaker shall at once sit down.
6. No remarks of a personal nature, or in any way subversive of discipline or harmony, will be permitted.
7. Speakers are requested to arrange for notes of their own speeches being taken.
8. No interruptions will be permitted during the reading of a paper, or the speech of another Member.

---

\* Special attention is directed to this rule, communications on both sides of the paper cannot be printed.

9. Meetings shall be broken up or adjourned only on the general vote of the Members present.

10. Non-Commissioned Officers and Soldiers of the Army, and Volunteer Corps shall, whenever practicable, be permitted to attend meetings to hear a lecture, and the introduction of a Member shall be sufficient to admit non-subscribers for the same purpose.

---

### LIST OF SUBJECTS ON WHICH PAPERS ARE DESIRED.

On the organisation of a Transport Department for the Army in India.

On the organisation of an Intelligence Department for the Army in India.

On Military Telegraphy and Signalling adapted for service in India.

On the uses to which Troops, British and Native, can be put in aid of Government works.

On the organisation of Pioneer Companies in Infantry Regiments, and the more careful instruction of this branch in field works, &c.

On the future of Cavalry, as drawn from the teaching of the last three great wars.

On the distribution of the Army in India strategically considered.

On the defence of our N.-W. Frontier.

On the defence of our N.-E. Frontier.

On the Sanitary Condition of the Army in India, British and Indian.

On the defence of the Ports and Coasts of India.

On the system of Military justice of our Army (British and Native).

On the practical education of Officers generally, especially of Staff Officers.

Notes on lessons taught by warfare in India, or against undisciplined enemies.

Reviews of Indian Campaigns with the lessons deducible therefrom.

On the conduct of operations among Mountains.

On the arming of the Native Army.

On the danger to, and aid derivable from, India in the event of a war with France, Russia, Prussia, or America.

Records of the History of Native Regiments, and of the services of British Regiments in India.

Memoirs of distinguished Native Soldiers.

Memoirs of distinguished Officers who have served in India.

On the possibility and advantage of inducing a large number of our time-expired British Soldiers, to settle in India.

On the advantages to be derived from a system of appointing our Soldiers, European and Native, to the numerous posts under Government from which they are now debarred.



On the aid which might be derived in the event of rebellion in India from the organisation of all British and Eurasian subjects as fighting men.

On the Military training of our Native Regiments.

Plans of operations of Campaigns, in which the Army of India might be engaged whether within or beyond our frontier.

On the results which will probably follow from moving Troops, British and Native, in course of relief by rail instead of by route march.

On the advantages of fortified posts as shewn during the Mutiny.

Punka-pulling by machinery adapted to Barracks and Hospitals of European Troops.

On Regimental Workshops, Gardens, and Soldiers' Industrial Exhibitions.

On the formation of new cantonments, and the conditions under which Civilians should be permitted to purchase house property therein.

On the carriage of Regimental reserve of Breech-loading Ammunition in Mountain Warfare.

On Military Law as a branch of an Officer's Education.

On the uses of torpedoes in River and Coast defence in India.

On the advantages of practice against moving targets for Artillery and Infantry.

On the requirements of a force of, say, 20,000 men, organised in India, for service in foreign parts, as regards Officers for staff employ with the force, and on the best means of supplying them under the present organisation of the Native Army.

On the best means of educating Native Officers, so as to bring them up to the requirements of the present day as regards Military knowledge.

Critical accounts and reviews of the siege operations of Indian Campaigns.

The causes of the increase of crime in the Army in the hot season, and its remedy.

On the advantages and defects of the system of organisation of Artillery by Brigades.

On the Topography of the Military Districts of India in its relation to strategy.

On Fortification in India.

On pontoons and Portable Bridges for Indian Service.

---

*N.B.*—This List is not meant to deter any one from writing on any other subjects.

---

## PATRON :

His Excellency The Right Hon'ble LORD NORTHBROOK.

## VICE-PATRONS :

His Excellency GENERAL LORD NAPIER OF MAGDALA, G.C.B., G.C.S.I.,  
*Commander-in-Chief in India.*

His Excellency LIEUT.-GENERAL SIR FREDERICK PAUL HAINES, K.C.B.,  
*Commander-in-Chief Madras Army.*

His Excellency LIEUT.-GENERAL THE HON'BLE SIR AUGUSTUS SPENCER, K.C.B.,  
*Commander-in-Chief, Bombay Army.*

*Commander-in-Chief of the Royal Navy, Indian Station.*

## COUNCIL.

|                                                     |  |                                                                            |
|-----------------------------------------------------|--|----------------------------------------------------------------------------|
| Major-General Huyshe, R.A.                          |  | Colonel Hon'ble F. Theisger, C.B., Adjutant General.                       |
| Colonel C. C. Fraser, C.B., V.C., 11th Hussars.     |  | Colonel Dickens, C.S.I., Secretary to Government, Public Works Department. |
| Colonel J. Watson, C.B., V.C., 13th Bengal Lancers. |  | Surgeon J. M. Cunningham, Sanitary Commissioner.                           |
| Colonel Osborne, C.B., 6th Royal Regiment.          |  | Surgeon A. F. Bradshaw, Surgeon to His Excellency the Commander-in-Chief.  |
| Colonel Ross, 14th Ferozepore Regiment.             |  |                                                                            |
| Colonel McLeod Innes, V.C., Royal Engrs.            |  |                                                                            |

*The rest of the Council have not yet been elected.*

## SECRETARY.

Lieut.-Colonel John Baillie, Bengal Staff Corps.

*LIST of Members who have joined since the publication of No. 5.*

| No. | NAMES.                           | RANK.                                    | CORPS.                                                 | STATION.         |
|-----|----------------------------------|------------------------------------------|--------------------------------------------------------|------------------|
| 1   | Laughton, D. W. ...              | Captain ...                              | Madras S. Corps...                                     | Chiculda (Berar) |
| 2   | Hunter, J. ...                   | Lieut.-Colonel, ...<br>doing duty with C | Royal Artillery }<br>Batty 16th Bde. }                 | Morar.           |
| 3   | Jacob, H. E. ...                 | Colonel ...                              | Bombay Staff Corps.                                    | Asseerghur.      |
| 4   | Laughton, C. D. <i>pd.</i> ...   | Captain ...                              | Asst. Commissioner                                     | Mysore (Madras)  |
| 5   | Morgan, A. B. ...                | Captain ...                              | 19th Foot. ...                                         | Allahabad.       |
| 6   | Hartshorne, A. G. ...            | Captain ...                              | Qr. Mr. 35th N. I.                                     | Cawnpoor.        |
| 7   | Bowey, G. B. C. <i>pd.</i> ...   | Lieutenant ...                           | E. 19th Royal Arty.                                    | Allahabad.       |
| 8   | Gordon, J. J. H. <i>pd.</i> ...  | Lt.-Colonel ...                          | 29th Punjab I. ...                                     | Jhelum.          |
| 9   | Beddy, E. <i>pd.</i> ...         | Captain ...                              | 29th Punjab I. ...                                     | Jhelum.          |
| 10  | Perkins, A. E. <i>pd.</i> ...    | Major ...                                | Supdg. Engineer<br>North W. P. ...                     | Bareilly.        |
| 11  | Anderson, R. P. ...              | Colonel ...                              | Comdg. 34th N. I.                                      | Morar.           |
| 12  | Harcourt, P. H. ...              | Captain ...                              | 1-24th R. A. ...                                       | Morar.           |
| 13  | Robertson, D. ...                | Captain ...                              | 44th Regt N. I. ...                                    | Shillong.        |
| 14  | Kinloch, A. A. A. <i>pd.</i> ... | Captain ...                              | 60th Rifles ...                                        | Rawul Pindee.    |
| 15  | Baillie, N. B. ...               | Surgeon ...                              | Civil Surgeon ...                                      | Bhagulpoor.      |
| 16  | Thomas, W. G. <i>pd.</i> ...     | Lieutenant ...                           | 25th K. O. B. ...                                      | Umballa.         |
| 17  | Steven, H. B. ...                | Colonel ...                              | 12th K. G. Regt. ...                                   | Sealkote.        |
| 18  | Taylor, T. ...                   | Colonel ...                              | 41st N. I. ...                                         | Buxa Bhootan.    |
| 19  | Clutterbuck, T. <i>pd.</i> ...   | Captain ...                              | Fort Adjutant. ...                                     | Attoc k.         |
| 20  | Wetherall, W. A. <i>pd.</i> ...  | Lieutenant ...                           | 22 Regt. Bom. N. I.                                    | Neemuch.         |
| 21  | Jacob, <i>pd.</i> ...            | Colonel ...                              | 22 Regt. Bom. N. I.                                    | Ditto.           |
| 22  | Nuttal, <i>pd.</i> ...           | Lieut.-Col. ...                          | 22 Regt. Bom. N. I.                                    | Ditto.           |
| 23  | Ritchie, <i>pd.</i> ...          | Captain ...                              | D-18th Royal Arty.                                     | Ditto.           |
| 24  | Adam, <i>pd.</i> ...             | Captain ...                              | Staff Officer. ...                                     | Ditto.           |
| 25  | Stevens, <i>pd.</i> ...          | Captain ...                              | 3rd Light Cavalry.                                     | Ditto.           |
| 26  | James, <i>pd.</i> ...            | Lieutenant ...                           | 3rd Light Cavalry.                                     | Ditto.           |
| 27  | Doran, J. ...                    | Lieut.-Col. ...                          | 27th P. Infantry. ...                                  | Barrackpo.e.     |
| 28  | Irvine, C. ...                   | Lieut.-Col. ...                          | 27th P. Infantry. ...                                  | Do.              |
| 29  | Gordon, W. ...                   | Colonel ...                              | Adj. Genl.'s Dept.,<br>Chief Inspector of<br>Musketry. | Simla.           |

*LIST of Officers who have agreed to undertake the duties of Corresponding Members for the United Service Institution of India at stations noted opposite their names.*

| NAMES.                                | CORPS.                         | STATIONS.                 |
|---------------------------------------|--------------------------------|---------------------------|
| Lieut.-Col. J. Hills, v.c., s.c. .... | Royal Artillery                | Abottabad.                |
| Captain W. R. Craster                 | Ditto                          | Agra.                     |
| Lieut.-Col. W. J. Gray                | Ditto                          | Allahabad.                |
| Captain Bythell                       | Staff Officer                  | Asseergurh.               |
| Major Conway-Gordon                   | B. M. Hydrabad Contingent      | Aurungabad.               |
| Lt.-Col. H. N. D. Prendergast         | Royal Engineers                | Bangalore.                |
| Captain A. G. Waterfield              | Station Staff Officer          | Barrackpore.              |
| Major W. Hicks                        | Brigade Major                  | Belgaum.                  |
| Lieut.-Colonel W. Barlow              | 5th Native Infantry            | Benares.                  |
| Captain G. Merewether, R.E.           | P. W. Department               | Bombay.                   |
| Lieutenant E. R. Elles                | Royal Artillery                | Bunnoo.                   |
| Major J. B. Hardy                     | Ditto                          | Cawnpore.                 |
| Captain D. McNeil                     | 41st Madras Native Infy.       | Cuttack.                  |
| Lieut.-Colonel Blair Reid             | Bengal Staff Corps             | Dalhousie (temporarily).  |
| Captain A. Battye                     | 2nd Goorkhas                   | Dehra Doon.               |
| Captain G. B. Wolsely                 | Station Staff Officer          | Delhi.                    |
| Major P. Story                        | 1st Goorkhas                   | Dhurmsala.                |
| Dr. C. R. Francis                     | Dy. Insp. Genl. of Hospitals,  | Dinapore.                 |
| Captain W. Galbraith                  | 85th Light Infantry            | Dugshai.                  |
| Captain G. Lamb                       | Ordnance Department            | Ferozepoor.               |
| Colonel R. Cadell, c.b. s.c.,         | Royal Artillery                | Fort St. George. [nopoly. |
| Major B. L. Forster                   | Ditto                          | Fort St. George & Trichi. |
| Captain W. Ker                        | 3rd Buffs                      | Fort William.             |
| Captain P. C. Story                   | 26th Regiment                  | Fyzabad.                  |
| Captain J. F. F. Cologan              | 18th Native Infantry           | Goruckpoor.               |
| Lieut.-Col. H. Beville, c.b., s.c.    | 1st Beloches                   | Hyderabad, Sind.          |
| Lieutenant W. S. Peat                 | Brigade Major                  | Jacobabad.                |
| Captain Fitz. G. Gallwey              | Adjutant, 8th Brigade, R.A.    | Lucknow.                  |
| Captain R. H. Rosser                  | 37th Regiment                  | Mean Meer.                |
| Captain Studdy                        | Royal Artillery                | Meerut.                   |
| Captain A. G. Handcock                | 6th Native Infantry            | Morar.                    |
| Captain R. B. Cambell                 | Guides                         | Murdan.                   |
| Captain A. C. Crookshank              | 32nd Native Infantry           | Umballa.                  |
| Captain G. W. B. Collis               | 6th Royal Regiment             | Peshawur. [bleshawar.     |
| Captain J. Van-Straubenzie            | Royal Artillery                | Poona, Bombay or Maha-    |
| Captain Edward Gunter                 | 59th Regt. Adj. Genl's Dept.   | Poona and Bombay gene-    |
| Captain F. S. S. Brind                | 17 Regt. Station Staff Officer | Shillong. [rally.         |
| Lieutenant W. Macdonald               | 12th K. G. Regiment            | Sealkote.                 |
| Lieutenant R. G. Kennedy              | 18th Hussars                   | Secundrabad.              |
| Lieut.-Colonel W. Dowell              | Royal Artillery                | Seetapoor.                |
| Colonel H. S. Adams                   | 13th Bombay Nat. Infy.         | Surat.                    |
| Captain H. Collett                    | Dy. Asst. Qr. Mr. General      | Umballa.                  |

*LIST of Members who have offered their services as Translators.*

| FRENCH.                                          | GERMAN.                               | ITALIAN.                                 |
|--------------------------------------------------|---------------------------------------|------------------------------------------|
| Major W. L. Twentyman, 18th Hussars              | Captain Ottley, R.E.                  | Major Siddons Young, B.S.C.              |
| Major E. Hill, 4th Cavy. Hyd. Cont.              | Capt. D. S. Warren, 1-14th Regt.      | Major C. Hills, 4th Regt., Cavy., H. C.  |
| Major Siddons Young, B.S.C.                      | Capt. Edward Gunter, 59th Regt.       | Captain J. F. FitzGerald Cologan, B.S.C. |
| Capt. James Colquhoun, R.A.                      | Lieut. Sawyer, 19th P. I.             |                                          |
| Captain J. F. Fitzgerald Cologan, B.S.C.         | Lieut. A. O. Green, R.E.              |                                          |
| Capt. A. Crookshank, 32nd PI.                    | Lieut. H. C. M. Turnbull, 6th Royals. |                                          |
| Captain A. R. Loughnan, Brigade Major, Bareilly. |                                       | SPANISH.                                 |
| Lieut. H. Sawyer, 19th P. I.                     |                                       | Lt.-Col. J. Baillie, B.S.C.              |
| Lieut. A. O. Green, R.E.                         |                                       |                                          |
| Major M. M. FitzGerald, R.A.                     |                                       |                                          |
| Captain T. Clutterbuck                           |                                       |                                          |

**UNITED SERVICE INSTITUTION OF INDIA**

**PRIZE MEDAL ESSAY**

The subject of the "Prize Essay" for 1872-73 is

"On the organization of a Transport Department suitable to the exigencies of the British Army in any part of the globe."

By order of the Council,

**JOHN BAILLIE, LIEUT.-COL.,**

*Secy. U. S. I. of India.*



## ORIGINAL PAPERS.

---

### I.

#### On Military Law, as a branch of an Officer's study.

---

It cannot, I fear, be denied, that Military Law and Military Lawyers are unpopular "institutions;" and that, not only, though chiefly, with the non-military class. They are, moreover, the objects of a peculiarly rampant mistrust and dislike in India, where, of all places in the world, Military Law is most extensively studied and practised.

I do not propose to discuss fully the several causes of this state of things; but before I attempt to evoke, for the study of Military Law, some of the zeal and interest which attach to other military topics, from the management of a *corps d'armée*, to the fashion of a soldier's habiliments, I must endeavour to show that the subject is really worth studying, and is not the profitless, if not mischievous absurdity which it has so often been misrepresented as being.

II. The chief cause of the unpopularity of "Military Law," at any rate with the general public, is the ignorance which prevails respecting it, conjoined with the jealousy and suspicion which have attached to that "*imperium in imperio*" Military authority, ever since a Standing Army was introduced, under the Stuarts.

Equal ignorance, it is true, exists among the masses, as to English Law; but, on the "*omne ignotum pro magifico*" principle, the latter is revered and trusted, almost as unreasoningly as the former is decried!

That like cause has not, in both cases, produced a like result is because, while military jurisdiction is misunderstood and mistrusted, it is part of the popular creed that the judge's ermine is spotless, and the judge's knowledge infallible; and the halo and prestige enjoyed by the Bench is largely shared by the Bar!

In the second place, Military Law is very generally confounded with the much feared and hated institution of "Martial Law;" a confusion of terms which is traceable not only in some of our received military authors, but even in the preamble to the Mutiny Act itself.

The great distinction between the two is clear enough to those who have closely studied the laws of the Army: but such students are few; and it is, at any rate certain, that thousands of otherwise well-informed people not only confound Military Law with Martial Law, but do not know what Martial Law itself is! Martial Law, when in force, applies to all persons whatsoever, civil or military, and makes them liable to military tribunals, for offences which, ordinarily, are not so cognizable

B

at all. Military Law never, under *any* circumstances, applies to any persons save those who are amenable to the Mutiny Act and Articles of War, or to any offences save those declared by itself.

The late Duke of Wellington defined "Martial Law" as "the will of the Military Commander," exercised during the suspension of (or, occasionally, even concurrently with) ordinary civil jurisdiction. This, however, like many another sententious apothegm, if taken alone, conveys a very erroneous impression. It is true that, when Martial Law has been duly proclaimed, the Military Commander can, at his discretion, order the trial of civilians as well as of soldiers for civil offences ; and that Military Officers are, then, the jurors and judges, in place of those whose functions are in abeyance. But such abnormal tribunals cannot administer justice according to the mere "will of the commander," or even according to their own clear military code ; they can only, legally, punish according to the (dormant) civil law ;\* and any illegal procedure, or irregularity of jurisdiction, would expose their members to pains and penalties.

This, it is clear, is a very different matter from the "Military Law" contained in and declared by the Mutiny Act ; a law which, at all times and in all places, is absolutely limited to persons belonging to, or connected with the Army ; and from which, civilians, as such, are entirely exempt, even in time of war, and during the temporary eclipse of the ordinary courts of judicature.

Lastly, dislike and distrust of Military Law is largely traceable to, or, at any rate, has been much aggravated by, frequent and persistent misrepresentations in the newspapers ; more particularly the newspapers of this country.

These misrepresentations, though occasionally, doubtless, the honest opinion of an Editor or a Correspondent, are due, as a rule, to utterly erroneous, and often palpably interested versions of particular "*causes célèbres* ;" and in every instance within my knowledge, the public might readily have been disabused of the false and mischievous impressions so disseminated ; but that the hands of those who could have set people right were tied by the time-honored, and I think, unwise, etiquette of the Indian Service, which absolutely prohibits official notice of newspaper articles.

Against such unfavorable criticisms, I could easily cite the published opinions of many high authorities, eminently entitled to speak "*ex*

---

\* The liability of officers and soldiers for *criminal* offences committed where there is no court of ordinary jurisdiction, is an illustration in point. (*See Section 101, Mutiny Act, and Articles 143, 145*). In such cases all the forms and details of procedure are military ; but the sentence must be in accordance with the Criminal Law.

It seems to be an undecided point whether, when Martial Law is in force, in a foreign country, occupied by a British Force, the law to be administered is British Law, or the ordinary local law ; but I fancy the proper rule, in such case, is that the penal liability should depend on the nationality of the culprit. This was the practice followed by the Duke of Wellington, when Martial Law was in force in the Peninsula ; and its propriety seems to have been accepted by Parliament in 1851.



*cathedra*;" not only as to the admirable nature of the "Court Martial System," as it has been called, but as to the marked success and advantage of its administration; and that, too, more particularly in India, where Military Law has been so specially decried!

Any extended discussion of this topic would be out of place, here; but I have, I hope, said enough to clear away, "*in limine*," some at least, of the prevailing distaste for my subject. Nay, I will even hope to arouse, for the study of Military Law, some of the zest and interest which attach to the pursuit of English Law, on which it is based, and to which it is so closely related; somewhat as a "poor relation," doubtless; but come of the same noble stock; and boasting, albeit in a different degree, of the same objects, the same excitements and triumphs, and it may, with all reverence, be added, the same "glorious uncertainties," as English Law!

III. It will, surely, be admitted that some attractions must exist in the study, however superficially, of a subject which, in every civilized country, has, for ages, attracted and held enthralled many of the brightest intellects of the time! There must be a fascination in the practice, at however humble a distance, of that pursuit which, in our own country, has so occupied so many noble lives, and led so many enthusiastic followers to fortune and fame!

There is not wanting, too, in the practice of Military Law, a spice of the combative element which lends such zest to ordinary legal practice; and which should, at any rate, not lessen its attractions for the soldier! It is a mere truism to say that every trial, however intrinsically trifling, involves the struggle of right with wrong; and although, at a military trial, there is not (fortunately) the same heat of conflict, and the same strong personal excitement as those which often characterize important civil cases, there is a very considerable amount of interest, and of "fight" too, sometimes, in a cleverly contested military trial, and a strong sense of well won triumph, when, after patient and intelligent investigation, the guilty are punished, or the innocent vindicated. Moreover, I hope to shew that, in one sense, a military trial possesses an interest and importance which can never attach to any civil case, however sensational. I trust, also, to prove that the too common objections to the study of Military Law are groundless, and that officers are *bound* to study it, not merely as a simple matter of duty, but by the still stronger spur of professional honor, which, alone, should impel them to acquire the knowledge, without which they can never be the safe or worthy custodians of the Army's fair fame, or of the honor, liberty, or life of their brother officers and soldiers!

IV. "*Ignorantia non excusat legem*." Every subject is bound, at his peril, to know what he may, or may not do, or leave undone, without a punishable breach of law. But as regards the laws of the Army, the officer has another and a far higher incentive to their study, besides the merely selfish desire to "take care of number one!" As one of the

appointed guardians of his service, he has to try and punish military offences, in others, as well as to eschew them for his own sake ; and, to discharge this high and honorable trust worthily and usefully, he must know something of the laws which govern the Army, and which render it a safeguard instead of a terror to the Nation.

We all know how a Barrister will, as the phrase is, "throw his soul" into the case of a client, whom he has, perhaps, never seen, and with whom he has no community of feeling or interest ; and we can all appreciate, and have often, perhaps, envied the *éclat* of forensic triumphs, and the *agréments* of Counsel's fees ! But I maintain, a military trial has an interest and a reward of a far higher character. The military Officer is not the mere paid advocate of one party in the case ; he is, at once, counsel on both sides, juror and judge ; both the Prosecutor and the Prisoner belong to his own brotherhood of arms ; and he is the arbiter between them ; honored with the double trust of guarding the discipline and fair fame of the Army, as his Sovereign's representative, and of watching over the just interests of an accused comrade.

Every military case tried affects, more or less, the honor or security of the whole Army, and every Officer serving on a Court Martial should feel that, for him, there is a personal stake in the issue : a satisfaction when deserved punishment wipes out a blot in the "stainless shield" of the Service : a joy and relief when the honor or innocence of an accused comrade is vindicated before the world !

We should hear less against the Court Martial system, and less of the irksomeness of Court Martial duty, if Officers would, generally, take this higher view of their judicial functions, and regard a Court Martial, not merely as a substitute for an everyday penal court, but as being really, what it is so often called, a court of military honor, still retaining many of the chivalric features and characteristics of the old warlike times, when military disputes and military offences were dealt with, either by the Sovereign in person, or by the chief knights of England, the Earl Marshal, or Lord High Constable.

V. I now come to the question, why the study of Military Law is so much more unpopular and neglected, in the Army itself, than that of many other professional subjects. Musketry, for example. How many Officers take "degrees" at Hythe, though there is no order for such advanced proficiency, and though they, themselves, will never be called upon to handle a rifle, on duty, save, perhaps, to teach other "young ideas how to shoot !"

All honor to those who do so qualify themselves, in that, or in any other branch of an Officer's "curriculum," a knowledge of which must so largely add to their general efficiency. But, as we are taught concerning moral duties, "these should ye have done, and not have left the other undone."

The study of Military Law is, and has long been, enjoined upon Officers with exceptional force and impressiveness ; and the answer to

my question must be sought in the general disfavor with which the subject is viewed, and in erroneous ideas as to its importance, and, perhaps, as to the practical advantages of studying it.

It has long been a fixed idea that the study of law, in *any* shape, is dry and wearisome ; and we all know what tough customers "fixed ideas" are to combat !

I can only say, in a very limited sense, "*experto credite* ;" but I can, at least, aver, that so far as I have gone in the study, I have found it, in a high degree, attractive and engrossing.

Were an Officer to limit his legal studies to the Mutiny Act and Queen's Regulations, he might, with reason, complain of a certain absence of excitement and interest in his work ; but I need hardly say, the study of Military Law should go far beyond this. It should travel into the same tracks, though not necessarily to the same extent, as those followed by the regular law student ; and the best lawyers will be the first to declare that the greater the progress made, the deeper becomes the interest and enjoyment of the explorer. Such experienced witnesses would emphatically repudiate, for the study of criminal law, the epithet "dry," unless, indeed, in the sense in which we apply it to champagne, of which exhilarating fluid, dryness is, among the initiated, the acme of praise !

The student of Military Law need not be repelled by the idea that any vast amount of erudition is necessary ; or that, to become a proficient Military Lawyer, he must risk becoming a dullard in other respects. Pope's well-known saying :—

"A little learning is a dangerous thing ;  
"Drink deep, or taste not the Pierian spring,"

however true of some studies, does not apply to that of which I am writing ; for, in Military Law, though extensive knowledge is desirable, a "little learning" is infinitely preferable to none at all ; and moreover, the little, once attained, almost always given a taste for more.

Then, as regards the idea that legal studies have a tendency to render men dull in other respects ; small doses cannot, surely, effect what the deepest potations have failed to produce ! and whatever may be said of certain other studies, no one can allege that distinguished lawyers, as a class, have ever been wanting in other branches of general knowledge, or in the qualities which command success in society ! On the contrary, the biographies of many of our great men tend, rather, to shew that the study and practice of law brightens and sharpens the intellect generally, and paves the way for success in many other channels of distinction.

Another explanation of the general neglect, among Officers, of the study of Military Law, is, I think, a common idea that, for the majority, it is unnecessary ; because, in all essential points, the actual work is done for them, the responsibility resting with other persons.

It is quite true that there is, in India, and to some extent in England, a staff of trained military Judge Advocates, who conduct all the more important trials, and who generally regulate, and are responsible for, the administration of Military Law. But, so, also, is it true, that every Regiment and Battery has its Commandant, who regulates and directs its drill, and is responsible for its general efficiency. We do not hear it argued that, because individual Officers are thus commanded and guided, they need not, themselves, study drill, or any other part of their duties as subordinates ; and yet, there is no doubt, this very style of argument is, tacitly, used by many, for neglecting the personal study of Military Law and procedure, which, far oftener than the "Field Exercise," have to be put into practice without any direct aid or guidance !

Again, many Officers, and some of great experience, consider that the study of Military Law, besides being dry, and practically unnecessary, involves that of many puerilities and antiquated absurdities ; and that many military rules as to charges, evidence, and procedure, are capricious and nonsensical.

I can only say, on this point, that most of our rules of procedure will be found in the military codes of the leading Nations of Europe ; so that if we are puerile or absurd, we are so in excellent company. That our rules of evidence are, fundamentally, the same as those which guide the highest courts of the Realm : while our procedure rules save us from many of the intricacies and subtleties which often vex and perplex other courts. And that our rules as to charges, and the definitions of military offences, which some find so bewildering, are based upon long experience of their propriety and necessity ; and if, in some cases, very antiquated, have at any rate, much of the wisdom which is proverbially associated with remote ancestry !

I will illustrate this by one striking case.

There is no military charge which has been more discussed than "Disobedience of lawful command ;" or as to which misapprehension is so frequent.

Many people fail to appreciate the great distinction between verbal and actual disobedience : between the mere "choleric word" which, however criminal in the subordinate, at most gives a bad example to others, and flouts some individual superior, and the *actual* disobedience, which may imperil a regiment or an army ! But, in fact, the distinction, so insisted on in Military Law, can lay claim to a very exalted and ancient origin.

It is enunciated in our Lord's parable of the two sons, ordered to work in their father's vineyard, of whom, one said, "I will not, but afterward he repented and went," while the other said, "I go Sir, and went not." (Matthew xxi. 28—31) We could not have a more forcible illustration of the distinction, in criminality, between mere verbal

refusal, without actual disobedience, and obedience in word followed by disobedience in act !

VI. I will now consider the incentives to the study, some of the objections to which I have endeavoured to meet. These incentives are, as I have already urged, twofold ; honor and duty.

I think, I have already said enough as to the first, the strength of which needs no iteration to a body of Military Officers ; but I must offer a few remarks as to the other motive.

All will, of course, admit the general principle, that it is the bounden duty of an Officer to obey orders ; and also, to perfect himself, as far as possible, in every branch of his military education, whether the particular study be enjoined in orders, or not.

As regards Military Law, this duty is not only self-evident, but it is the subject of more numerous, and more impressive orders, both in England and in India, than any other branch of an Officer's training.

It was, I think, in the year 1838, that the importance of the study was first fully recognised at the Horse Guards. At all events, in that year, its neglect was publicly noticed ; a more general distribution of the Mutiny Act and Articles of War was ordered ; and it was notified in Horse Guards' General Orders of the 22nd May (re-published in India on the 6th September) that Regimental Officers would thence forward, be expected to obtain "an early and thorough knowledge of "the laws and ordinances under which they discharge one of their most "important (because most solemn) duties ; viz. that of President or "Member of a Court Martial."

Inspecting Officers were directed to ascertain, and report, if the order was attended to ; and to report specially, *and by name*, any Officer of a Regiment, who neglected "to make himself acquainted with the "provisions of the Mutiny Act and Articles of War."

This stringent order was not, it would seem, very strictly carried out ; but, as we all know, the Queen's Regulations have long contained provisions similar to those which now form the 733rd paragraph, in the Section on Courts Martial. That paragraph is as follows :—

"The duties devolving upon members of Courts Martial are of "the most grave and important nature ; and in order to discharge them "with justice and propriety, it is incumbent upon all Officers to apply "themselves diligently to the acquirement of a competent knowledge of "Military Law, and of the orders and regulations founded thereon, as also "of the practice of military courts, with the view of making themselves "acquainted with the nature and extent of the powers and authority "vested in them by the Legislature ; by the temperate and judicious "exercise of which, the discipline and character of the Army are to be "maintained."

Corresponding instructions have, for very many years, been promulgated in the Indian Military Regulations of each Presidency. (See

for example, para. 1, Section 21 of the Bengal Military Regulations). Many other occasional orders could be cited ; but nothing can be stronger or more unmistakeable than what I have quoted, as illustrating the imperative *duty* of studying Military Law.

Lately, there has been what may be called a "Revival" on the subject. Facilities have been afforded for uniformity and accuracy of procedure ; the standard of proficiency for the Judge Advocate General's Department, in India, has been fixed by severe examination tests, which must be passed before a candidate is admitted to its ranks ; and Military Law, to a limited extent, is one of the branches of the lately introduced course of garrison instruction, both at home and abroad.

I think, however, I am justified in saying that we want something more than accuracy in bare procedure ; something more general than even the highest proficiency in a small and hardworked Staff Department : and a far wider and more searching course of study than that contemplated in the scheme of Garrison Instruction, admirable though that is, so far as it goes.

The fact is, Officers must study, for themselves, seniors as well as juniors ; and the revival of the orders issued in 1838 would doubtless, do much to expedite this desirable result. Once made it manifest that such study is an imperative duty ; that it must be undertaken, on pain of report ; and that *no* Officer will be advanced who has not attained some degree of proficiency in it ; and sooner or later, all will "make a merit of necessity." Duty is a spur which acts upon all ; it will stir up, alike, those if any, who are too callous or too careless to respond to the call of honor, and those who are too proud to study with the sole object of personal gain or advantage !

The duty of studying Military Law is far more urgent in India than it is at home. In England, Courts Martial, as a rule, try only offences against discipline ; and, many, even of those, when involving serious assaults, come under civil cognizance ; while thefts, embezzlement, and other offences of a felonious or fraudulent nature, which comprise some of the most difficult cases, are, almost invariably, dealt with by the Magistrates, or by the superior law courts.

In this country, on the other hand, Courts Martial not only habitually try every offence whatsoever which comes within the provisions of the Mutiny Act or Articles of War, but also, with rare exceptions, offences against the Criminal Law of India, under Section 101 of the Mutiny Act.

The military Officer in India has thus to adjudicate upon every variety of military and civil crime ; and has not only to administer, as counsel, juror and judge, his own army laws, but, also, the Penal Laws of India ; in lieu of the highest tribunals of the country, where trained lawyers practice, and judges of the highest reputation preside.

Even this is not all. India has a Mixed Force, and the Native Army has its own separate law, and its own regulations and rules of pro-

cedure. These, too, need close and careful study ; and that not *only* by Officers directly connected with Native Troops, some of whom wield such exceptional powers under the 90th Article of War. Every European Officer in India may, at some time or other, have to deal judicially with native soldiers, either as member of a Court Martial for their trial, under Article 75, 96 or 97, or as the Commandant of a Mixed Force, although he may never, actually, have served a day with Natives. Then, again, the Native Commissioned Officers of the Indian Army look to European Officers for guidance in legal matters ; so that the European Officer has not only to act for himself, but often for others also. It was proposed, in 1862, to call upon even *Native* Officers to study Military Law ; and measures were initiated for the preparation of a vernacular manual on the subject, for their use. It may, at least, be said of this project that it had more practical sense in it than one lately started by a newspaper correspondent, who suggested, with seeming earnestness, that our Native Officers should be instructed in Geology, Hydrostatics, or some other scientific subjects ! but it is not a matter of either surprise or regret that the idea came to nothing.

In this Presidency, Native Officers, now, hardly ever sit on any Court Martial save a General Court, at which the proceedings are conducted by a trained Judge Advocate ; and whenever they sit on District or Regimental Courts Martial (a practice still largely obtaining in Madras and Bombay), they are associated with an experienced European Superintending Officer, by whom they are relieved of all responsibility for the legality and correctness of their procedure.

It seems to me, therefore, that Native Officers, while they would undoubtedly be more useful and efficient, in proportion to the extent of their general knowledge, including some insight into the laws which govern their Service, may very well be left uninstructed in this particular subject, and free to devote their energies to subjects more closely bearing on their personal duties and functions. But, the very fact that they are left to the guidance of European Officers, is the strongest reason why such Officers should not, themselves, be " blind leaders of the blind !"

VII. As regards the study of Military Law, Officers may be divided into four classes : 1st. Those who study it thoroughly ; 2ndly, those who study it to the extent contemplated by the course of garrison instruction ; 3rdly, Those who are contented with a knowledge of the Mutiny Act and Articles of War ; and, lastly, those who never study it at all, and probably never even give it a thought, except, perhaps, on the occasion of some " wig " or " remark " by superior authority, for errors, or failures of justice, due to their ignorance or carelessness !

I can say nothing more, to this last class of Officers, than I have already said ; and I pass it by.

The Officers in class 3 literally obey the orders of 1838 to which I have, before, alluded ; but they can scarcely be said to obey the spirit,

C

if even the letter, of the Queen's Regulations, as to qualification in Military Law.

The second class consists, mainly if not entirely, of young Officers ; and for these, half-yearly examinations are prescribed ; the text books for which are, the Mutiny Act and Articles of War, the Queen's Regulations, and the latest edition of " Simmons on Courts Martial," in studying which they have the advantage of the lectures and explanations of the " Garrison Instructor."

A fair knowledge of the text books named, must involve a very respectable acquaintance with Military Law and procedure, as applicable to the European Forces ; but there is much, not only in Simmons, but in the Mutiny Act itself, of which a fair and intelligent knowledge is scarcely attainable, without a reference to *other* books, while it may reasonably be doubted if the hard-worked Garrison Instructor will be able to explain adequately the more difficult features of a subject, of which his own theoretical and practical knowledge must necessarily be limited ; while his continuous labor will almost preclude him from personal study of it.

It is, I fancy, generally admitted, that Military Law is one of the most superficially treated of the subjects taught at the Staff College ; and if so, "*custodes quis custodiet ipsos ?*"

However, the scheme, so far as it goes, is, undoubtedly, an admirable reform : and Officers who pass the prescribed tests, however ignorant of the law and procedure for Native Troops, (save in so far as they may tally with the European Code,) will be qualified to conduct European General Courts Martial of a simple character. It is worthy, I think, of consideration, whether such Officers should not be distinguished, in the Army List, by some letter or letters denoting their having passed what we may call the "little go" in Military Law. Those who qualify as Judge Advocates are distinguished by the letters M.L.

As to the first mentioned class of Officers ; those who aim at entering, or at any rate officiating in, the Judge Advocate General's Department, or who are anxious, without any such ulterior views, to study thoroughly a subject of admittedly vast importance to the well being of the Army ; they are already numerous, and their number will, it may reasonably be hoped, largely increase.

Such students, and I may say, Officers in general, will always find willing advisers in the Officers of the Judge Advocate's Department ; and, when at Head Quarter stations, can have the advantage of access to the Departmental Books. For the most part, however, their studies must, necessarily, be independent, and pursued at their own cost in the matter of books ; the list of which, in this Presidency, is somewhat numerous. I am unaware of the practice in Madras and Bombay ; but the Officer in Bengal, who wishes to pass as a candidate for the Judge



Advocate General's Department, has to pursue the subjoined course of reading:—

1. The Annual Mutiny Act and Articles of War.
2. The Indian Articles of War (Act V. of 1869).
3. The Indian Evidence Act (Act II of 1855).
4. The Indian Penal Code (Act XLV of 1860).
5. The Queen's Regulations (Section 14 on [Courts Martial, &c., and portions of Sections 7, 15, 17, 19, 23, 25, 27, 28, 29, 30 ; and of the Appendices).
6. Bengal Military Regulations (Sections 21, 22, 23 and 53.)
7. The Government and Army General Orders connected with Courts Martial and Courts of Requests.
8. The practice and procedure of Military Courts; that is Courts Martial, Courts of Inquiry, and Courts of Requests.
9. Simmons, on Courts Martial.
10. Archbold's " Pleading and Evidence in criminal cases."
11. Some standard work upon general evidence.

Book study, alone, however will not suffice. The student should frequent the practical school as well ; attending Courts Martial, and noting how theory is carried into practice by the Judge Advocate, or by the experienced Officers who, at important trials, fill the office of President.\*

As regards junior Officers, attendance at Courts Martial is a prescribed duty (see para. 734, Queen's Regulations, and paras. 5, 6, Section 21, Bengal Military Regulations) ; but it is by no means, young Officers only for whom careful and practical study of Military Law is essential ; and, moreover, a candidate for the Judge Advocate General's Department must be an Officer of some standing in the Service.

It is much to be regretted that there is, in India, no recognized text book or manual to simplify the study of Military Law and procedure.

A work of the kind was published in Bombay in 1854 ; much of which is of undoubted value ; but it contains so much that is obsolete or incorrect, that it would be useless, now, as a guide in either European or Native cases.

---

\* Orders have lately been issued, which will ensure the uniform appointment, to European General and District Courts, of Presidents of acknowledged ability and experience. See G. O. No. 341, dated 23rd December 1871.

The works of Hough and Kennedy, apart from any other defects, are open to the same objection ; and the works published in England, and relating to the European force only, even if admitted as correct in principle, as far as they go, are too partial to meet the want felt in India ; and are not considered sufficient, even at home ; for the desirability of a comprehensive text book on Military Law, as an accompaniment to the proposed reform of Military Law itself, was strongly urged by the Royal Courts Martial Commission which sat in 1869.

What is required is, a comprehensive, but simple manual, treating of the general principles of Law and Evidence ; the variations thereof peculiar to courts military ; and the various regulations and orders, as to procedure, now in force ; eliminating every thing redundant or obsolete.

One of the chief difficulties which the student, at present, meets with, apart from the intricacies of law itself, is the number and confusion of the existing orders as to matters of practice and procedure ; and the contradictions and perplexities involved by the frequent issue of new constructions, or rules, without the formal cancelment of those previously in force. In this respect we may expect a considerable reform, so far as Bengal is concerned, in the forthcoming revised Military Regulations ; but a still better reform would, I think, be, to have a code of such regulations for Military Courts for the whole of India. In many respects, it is, doubtless, necessary to have separate Military Regulations for each Presidency ; but this necessity cannot apply to rules for Court Martial procedure, which, as regards natives, are, or should be, the same all over India, and as regards Europeans, are the same all the world over.

Further discussion on this point will be more appropriate in an article upon the state of the system of administering military justice in India, which I hope, shortly, to prepare.

VIII. This article has extended to much greater length than I anticipated ; and I feel bound to apologise to the readers of the United Service Journal for detaining them so long from more palatable subjects.

I can only say that what I have, to the extent of my ability, treated of, besides being of unquestionable importance in itself, possesses, for me, a very great interest ; and that I have been anxious to omit nothing which seemed likely to create or increase an interest in it on the part of others. I doubt not that many of those who have already written in this journal, know full well how much more *laborious* it is to write a short than a long article ; and how difficult it is to avoid the Scylla of obscurity, in striving to eschew the Charybdis of prosiness !

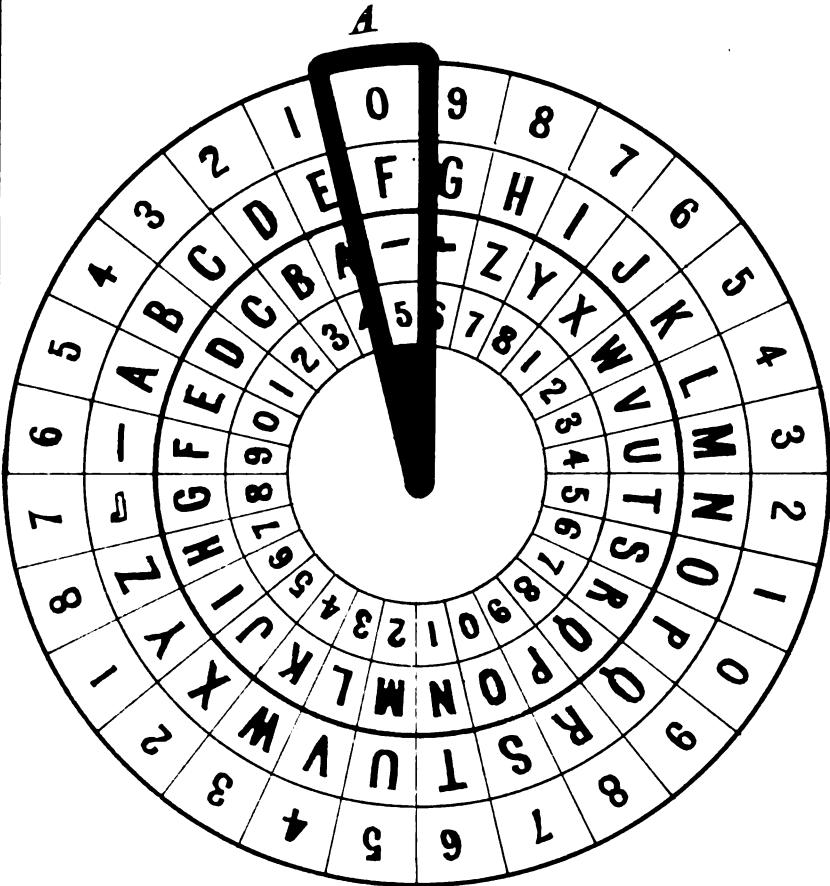
I really have not had *time* to compass greater brevity ; and I can only hope that I have not defeated my object by discussing it "*ad nauseam* ;" and that no one will quote, against me, the proverb of that proverbially talkative nation the French,

" Qui trop dit, ne dit rien."

FRED. MAISEY, Col.,  
Judge Advocate General.



FIG: 1  
THE CRYPTOGRAPH  
CODE BOOK



*A. Arm*

## II.

**Army Signalling and Telegraphy—The Cypher System.**

THE "Cypher System" although not so essential to the Army Signaller in this country, as in any other part of the world, for the reason that our ordinary signals, especially messages from the Code Book, would puzzle any enemy that we are likely to come into contact with at present, is still such a valuable system, and one on which we may never know when we shall have to depend entirely, that I am of opinion it cannot be too carefully studied. I therefore trust, that the following ideas which suggested themselves to me, both during, and since I passed through the course, may not be considered out of place, but may help to simplify, what most undoubtedly is one of the most important features of the system of "Army Signalling and Telegraphy."

Before proceeding to explain the Instrument and System that I propose, I will first describe the "Cryptograph" or Cypher Wheel as laid down for general use in the "Code Book," drawing attention at the same time to another plan suggested by Colonel Wolseley in his "Soldier's Pocket Book," in order, that the advantages and disadvantages of the different systems may be compared by the readers of these notes.


First the "Cryptograph or Cypher Wheel" as laid down in the "Code Book." It consists of two discs, one large and one small, *vide* Fig. I, to the latter is attached an arm A, by means of which it is turned. The outer circle consists of figures 1 to 0 running from left to right continuously. The inner is filled with the alphabet from left to right and ending with two signs — end of word, and end of message. The inner disc is a facsimile of the outer, only that the alphabet signs and figures are reversed entirely.

To turn a message into cypher with this instrument, the following process has to be gone through. First, a "Keyword" which must not be one of common occurrence has to be decided on, for example sake, let us suppose, "Friday" to be decided upon. The sender must first write out in his pocket-book his message letter by letter above the Keyword which has to be repeated continuously letter by letter to the end of the message, and above these two lines he enters in the same manner the Cypher, finding it out letter by letter on the Cryptograph. F is the first letter of the Keyword, turn the arm with — sign of end of word on it round until it covers the F on the outer disc, then look for the first letter of your true message, which we will say is "Ammunition failing, send supplies," would be A, on the outer disc, and put down the letter you find under it on the inner disc *viz.* E, this will be the first letter of your Cypher Message.

Then turn the arm A to the second letter of your keyword, look for the second letter of your true message, and under it you will find your Cypher Letter.

In this way you put down the whole message, always turning the arm A to the letter of the Keyword next in order, look for letter of true message that is above it, on the outer disc and you will find the Cypher letter below it. At end of word you of course write the Key letter as it must be the same *vide* Fig. I.

Always remember that in sending or receiving a Cypher message, the outer disc represents the True Message, the lower or inner the Cypher. The above mentioned message will be written out in three (3) lines as follows :

E. e. x. k. o. p. m. i. v. R. a, s. e  
 A. m. m. u. n. i. t. i. o. n. — f. a  
 F. r. i. d. a. y. F. r. i. d. a. y. F  
  
 i. y. w. o. a. F. s. d. a. y. y. o. y. u  
 i. l. i. n. g. — s. e. n. d. — s. u. p  
 r. i. d. a. y. F. r. i. d. a. y. F. r. i  
  
 p. q. p. a. s. i. d.  
 p. l. i. e. s. —   
 d. a. y. F. r. i. d.

When you come to the end of a word in sending a message, you give the letter above the sign and then drop the flag. You receive and put down the message in the same manner except that you write the Cypher letters over the keyword first, and the true message forms the upper line. If you are reading a message directly the flag is dropped, you get to work with the Cryptograph, and try and decipher the message only reversing the order described in sending a message.

It takes longer to decipher a word in this manner, unless one is in first rate practice than it does to signal it.

#### Secondly, Colonel Wolseley's Plan.

A Keyword is necessary also for this and must on no account have a letter repeated in it. Colonel W. describes his plan as follows :

Divide a square into 25 twenty-five spaces and fill them in as in Fig. II. This method of numbering them, and the keyword, is all that one has to remember. Given the Keyword "Majesty" fill in the spaces with the letters commencing from the upper left hand corner, and working to the right. The remaining spaces are filled in with the alphabet without the letters that have already been given by the Keyword.

## COLONEL WOLSELEY'S CYPHER BOARD.

Fig. II.

|        |         |            |         |        |
|--------|---------|------------|---------|--------|
| 1<br>M | 2<br>A  | 3<br>J (I) | 4<br>E  | 5<br>S |
| 8<br>T | 9<br>Y  | 10<br>B    | 11<br>C | 6<br>D |
| 7<br>F | 12<br>G | H          | 12<br>K | 7<br>L |
| 6<br>N | 11<br>O | 10<br>P    | 9<br>Q  | 8<br>R |
| 5<br>U | 4<br>V  | 3<br>W     | 2<br>X  | 1<br>Z |

On the centre square there will always be a letter which has no number, so when it is necessary to use it, the true letter is given.

To send a message by this, look for the letter, note the number above it, and substitute for it the letter you find in the space having a corresponding number. For instance, "We attack at Noon." You look for W. you find 3, turn to the corresponding 3 and you find in it space, T. or T. The above message in Cypher will read, T. V. X. R. R. X. O. G. X. R. D. C. C. D. To decypher this you just reverse the above process.

In using this Cypher there is no need of distinguishing the end of word which will render your message less liable to be decyphered by the enemy either if they are watching your signals or your message falls into their hands.

I will now proceed to explain my plan and also the instrument which I propose now to adopt and my reasons for considering that it should supersede both of the systems already described.

Perhaps it would be better first to describe the Instrument which is simply an adaption of the one in the Code Book, the difference being (*vide* Fig. III.) that the arm is done away with, the two discs are made of thin wood or block tin moveable on an axle fitted into a handle, the upper end of the axle is provided with a nut by which means the two discs

are clamped tight or loosened as required. The top of the axle is a screw on which the nut works. When a message has to be sent or read with this instrument, the man working it, holds the handle, in his left hand disc's face upwards, loosens the nut and is ready for the message.

I should have mentioned that the sign — end of word comes next to Z and \* is end of message instead of  $\neg$  as the "Code Book" Cryptograph.

I have founded my system on the supposition which I shall endeavour to prove is right that a Complicated Cypher such as the two first mentioned, is entirely unnecessary.

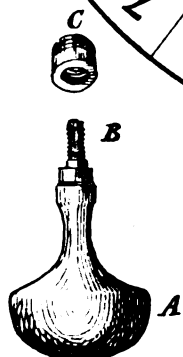
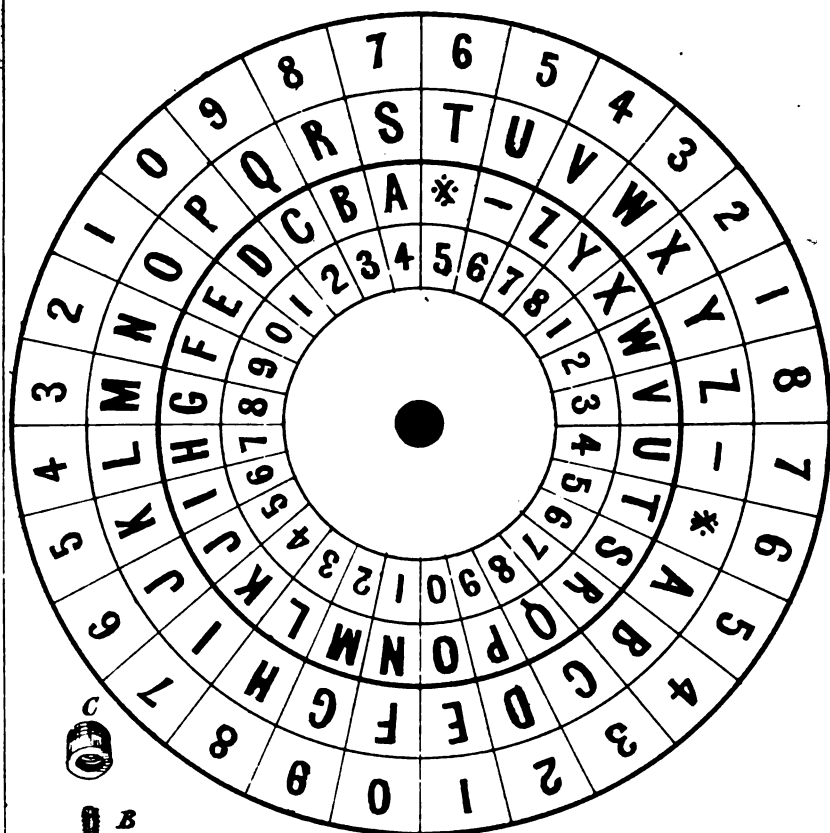
It is plain that the more complicated a Cypher is the more difficult it is to find out its true meaning, and where time is no object perhaps it would be better to use the most elaborate one that could be invented, but where as in Army Signalling, rapidity and simplicity are the great points, a difficult Cypher appears to me to be a great mistake. In the first place I have shown what a tedious and laborious task it is writing out and decyphering a message according to the method laid down in the Code Book. This may certainly puzzle an enemy, but take into consideration the time taken up by your corresponding station in making it out. Time is invaluable under such circumstances, and if you can send a Cypher so simple that your friends can read your message almost with its true meaning at once and act upon it, the enemy not having the Key will be puzzled sufficiently long to counteract all the advantages of a difficult Cypher.

Again we must take into consideration that an enemy, at least in a generality of cases ; would not be either directly in front or rear of a signal station, but in a flank position. Now all army signalmen know that one of the first duties they are taught is to wave the flag at right angles to the line of sight *viz.* that their position should be exactly facing the corresponding station unless the direction of the wind forces them to stand differently and they also have experienced the difficulties of reading messages, when they are at all carelessly signalled or when proper attention has not been paid to the back ground. However the inequalities of the ground render it difficult at times to distinguish the dots from the dashes with any amount of certainty. How often do you hear the expression, "I was in such a bad position." Such I imagine is the position an enemy would generally find himself in and with a Cypher message to find out as well, sufficient time would elapse to allow of its being acted on before he could decypher its true meaning. Accordingly I consider that a key letter is quite sufficient for Cypher messages as I look on the duty of settling beforehand a keyword or letter, as one that might be forgotten, I would suggest that the Key letter should always be the first letter of the true message and change every time a message or answer is sent. Now these frequent, although sim-





FIG 2  
CRYPTOGRAPH  
PROPOSED BY CAPT<sup>M</sup> HENNEL



half size

A. handle  
B. screw  
C. nut

ple changes would be in my opinion very difficult to follow especially in signalling a number of short and urgent orders.

Note the ease and rapidity with which this system is worked. The following message has to be signalled. "The enemy are moving in force on the right." T is the Key letter, the Signallman as before described holds the handle of the Cryptograph in his left hand, discs upwards, with his right hand he turns the inner disc and places the sign \* (end of message) under T clamps the two discs with the nut and by turning the left wrist can read off the Cypher to the man signalling with the flag. The message will read in Cypher. T. L. O. U. O. F. O. G. W. U. G. E. Z. K. F. M. U. K. F. U. N. E. B. Q. O. U. E. F. U. T. L. O. U. B. K. M. L. T. U. T. The man with the Cryptograph at the other station, would proceed in exactly in the same manner. Nothing has to be decided on beforehand and no elaborate process of writing out the messages is required. Supposing the station replies "Have they many guns." Both Cryptographs are taken in hand, the inner discs changed to H, and you immediately have a new Cypher. This of course may change twenty times a day.

This system has one other advantage which would be almost impossible with the other two.

It is thus. In the first place there need not be any stop at the end of every word I mean of course by a stop the lowering of the flag except in the case of its becoming necessary to change into Cypher in the middle of an ordinary message. When signalling in the presence of an enemy, the Cryptograph should always be at hand, and directly the first letter of a message is received, the inner disc should be moved as described above, for supposing you noticed after giving "the enemy are" that they were reading your signals and you wanted to change into Cypher, the man using the Cryptograph which he has already fixed at T goes on calling out the remainder of the message in Cypher. Your corresponding station having got "The enemy are" read E. E. Z. K. F. M. U. and see that the flag is lowered. The man at once sees that this makes no sense so takes up his Cryptograph and reads off "moving" and — end of word. Gives the understood and takes the remainder in Cypher. Very few of our own Army Signallers would I believe be able to follow or decypher such rapid changes as these unless warned beforehand.

I am of opinion that Signallmen should be practised in the above.

By reference to Fig. III, the reader will be able to follow the first and third examples of my system.

Colonel Wolseley lays stress on the fact of dropping the flag at the end of a word being a hint to the enemy, and it most undoubtedly is, but then Colonel W. gives no sign or letter for the sign, so that his Cypher shows no connecting links which are at times rather necessary, when one or two letters may have been signalled or read wrong.

D

In sending short sentences, the signalman hardly requires to stop but with my system if he is tired he can rest himself for a short time at any period of the message without reference to the words, but should an ordinary message be turned into Cypher suddenly, it should be an understood thing that the flag is to be dropped after the first Cypher word to give time to the Corresponding Station to find out that you have changed to Cypher, which they will show by giving the understood.

In conclusion I would point out, that in my system nothing is left to chance, and that the Cypher, although simple, still allows of messages being sent in it, with such celerity and precision ; that the saving of time gained over the other two methods is, in my opinion ; a matter of the greatest importance. In Army Signalling simplicity combined with rapidity of action is of the utmost value and nothing can be gained by using a system which is liable to puzzle friends as well as enemies.

Of course where messages in Cypher have to be written and sent by hand and there is a chance of their falling into the hands of an enemy, the more elaborate the Cypher is, the better, but for field signalling where every moment is of value, a difficult Cypher is unnecessary.

In signalling, the words should be numbered as the groups of figures are in Code Messages, &c. at the end, if you are at all in doubt about a certain word you can give the "repeat" and its number. This is better than giving the "Not Understood" after the word which necessitates a stop at the end of each word, which is in itself a hint to an enemy as before mentioned.

I trust that the above will induce other officers, to give their experience of the "Cypher System," with a view to its being more thoroughly improved.

R. HENNELL, *Capt.*,

*25th Regt. N. L. L.*

## III.

## On Cavalry.

WRITING an essay on Cavalry, which will be readable, short, and at the same time comprehensive, seems a difficult matter. To write an exhaustive essay would be hopeless from the time it would take, and the length to which it would extend.

I therefore propose to touch on the subjects of *organization*, *formation* and *tactics* each in its turn, but without going deeply into any one of them, on the preliminary point of *material*, there is little to be said. The desideratum being speed and lasting power, the men should not be too heavy, and the horses as good as can be procured for the price allowed.

With regard to organization then, I consider the first point to be to lessen the dead weight on the horse with as little loss of efficiency as possible. This I should propose to do as follows :—

Every Cavalry Regiment to have attached to it a certain number of light carts (say, one per troop) solely for the above purpose. These carts should be on the strength of the regiment and always kept up, should work with the regiment on parade, so as to learn their proper place under all circumstances, and should accompany the regiment wherever it went, and a few tattoos per troop would enable the regiment to afford assistance when required. If the description of the sort of cart required were advertised, manufacturing firms in England would soon turn them out, with every desideratum for a campaign; for instance, light iron bodies with facilities for quickly unshipping the wheels and punting them across rivers where the fords were deep. By the use of these carts, a great part of the dead weight might be taken off the horse, which I should reduce as follows. The valise to be carried by the cart, as also a proportion of spare shoes and nails, picketting gear and nose-bags. The trooper would then have to carry as dead weight on the horse his arms, saddle with a light blanket underneath it, (unless there was room for the blankets in the cart) the saddle should have a pair of wallets holding a tin flask of water, a day's rations, a pair of warm stockings and a short light flannel shirt; his cloak strapped behind in place of the valise, which would enable the trooper to keep his bridle hand low, and manage his horse better than if it was fastened in front. His arms and ammunition should consist of a sword, a breech loading longish barrelled pistol and twenty cartridges worn on a waist-belt supported by a belt over the shoulder. I would, however, retain a small proportion of carbines say four file per troop for convoy and other duties, these being of a light pattern. Farriers to wear no swords, but in place of them, to carry six pairs of shoes, nails, &c., and then only arm to be the pistol for their defence. My reason for substituting the pistol for the carbine

is lightness, and though a carbine is a better weapon, I would subordinate everything to taking weight off the horse. Cavalry skirmishing, with a view to damaging the enemy is in my opinion a farce, the business of cavalry when extended as skirmishers is to cover a very great extent of ground, observe what is going on, and convey information rapidly, and the fire-arm whatever it may be is simply for defensive purposes, or as a signal of danger ahead. In fact, what is now designated, skirmishing should, according to my ideas, be abolished and scouting or patrolling substituted for it, each small scouting party extending so as to cover as much ground as possible.

I have not entered deeply into this part of my subject, my object being merely to suggest what I consider manifest improvements on the present organization. I will now say a few words on formation including tactics and the uses to be made of Cavalry generally.

I am very strongly in favor of always working Cavalry in rank entire. By this method its physical force in line of battle is nearly doubled, and at the same time its moral strength is increased. There is no doubt that knowing there is a support at hand, gives men great confidence in an attack, and, in infantry, this is produced by the rear rank close up, but in Cavalry, the feeling of the front-rank man would be, "If I or my horse goes down, I shall have the rear-rank horse on the top of me," whereas, a rear-rank manœuvred as a supporting regiment at two or three hundred yards in rear gives the confidence required.

There are many formations previous to the attack recommended by military writers, and of course, much must depend on the ground, but as a rule and the circumstances of the ground being favorable, I prefer a double column formation for first line and support as being the formation easiest and quickest for getting into line. The reserve might generally be in close column. In both these formations a regiment can be kept well in hand, and that is a very great point.

There might be frequently circumstances in which other formations would answer better, for instance, echelon formations, either of troops from the double column, or of squadrons from the line or close column, especially when a flank was threatened, as well as the front, but a Cavalry Commander would at once see the best formation for his three lines, the great object being to keep the two first lines well in hand, and expose them to fire as little as possible before the moment of attack, and to lay down rules, to be adopted under all circumstances is clearly impossible.

Every Cavalry force in the field, whether in presence of the enemy, or in his vicinity, and, in fact, at all times during a campaign, when it has once taken the field, should employ scouting parties as an intelligence department, for which duty intelligent men should be specially trained. The main points of training would be to learn to judge of the general lay of a country, the obstacles to be met with, and its generally

adaptability or the reverse for Cavalry ; also when in sight of the enemy to judge the strength, and to observe and report their movements, and at night to accustom the ear to take the place of the eye.

Officers and intelligent men should be often practised in these duties as far as practicable, and taught to put down on paper clearly and concisely the result of their observations.

Jomini recommends as a formation, quarter deployed, quarter in column on each wing, quarter in close column in reserve. The two quarters in column on each wing of the first line are clearly in order to be able, at whichever flank it was required, to unfold quickly a greater extent of front for the attack, the quarter on the wing unfolded dropping back as the support.

It may be advisable, at any time, for the first line or the two first lines to get into close columns for charging squares by successive squadrons, which seems the only way of charging a square. I will return to this part of the subject later.

The position of Cavalry in an army previous to the attack should be to the rear of the flanks of an army, and it is obviously very desirable that the Commander of the Cavalry should be left as much unfettered as possible by orders, and trusted to seize opportunities promptly as they occurred for making attacks or demonstrations, such opportunities being generally very transient, and a Cavalry Commander should always bear in mind these two great principles ; first, that an attack should never be made (but under very exceptionable circumstances) without a support and reserve, and secondly, that it is very unadvisable to commit your whole body, especially early in the day. If the force is large enough, a certain proportion should be dismounted in a concealed spot and horses and men kept as fresh as possible for later operations or pursuit. There are certain manifest opportunities for a cavalry attack. For instance, if cavalry can get on the flank of infantry engaged with infantry, success is a certainty, the enemy being unable to form square from fear of the converging fire of the opposing infantry. Secondly, when infantry in square is exposed to the fire of artillery. Thirdly, when the enemy's force is retiring, at which time constant successive attacks are likely to turn the retreat into a rout. Fourthly, to protect and give time for the retirement of its own army. Fifthly, when batteries of the enemy's artillery can be caught with a weak escort, at which time a rush on the guns even if there is only time to cut the traces, may be of immense use. There may be many other opportunities which will be seized or slipped just according to the quickness of observation and readiness of the Commander.

It is very desirable in any great combined attack of cavalry that there should be infantry to back them up, one of the peculiarities of the cavalry attack being that whether successful or otherwise, it leaves the attacking force, for the moment, very much at the mercy of any fresh

troops, and until it has had time to retire and re-form, it is quite unfit to receive an attack. I have very little doubt myself (though the contrary opinion largely prevails) that a cavalry attack ought to be successful even against a square.

Hamley in his "Operations of War" (from which I have drawn occasionally in this Essay) says—

"In the last great wars originated the notion which now prevails that cavalry cannot break steady infantry, though it is clear that *in no formation*, can infantry really withstand a cavalry charge pushed home, and that when horse fail to break foot, it is from moral not physical causes."

I believe the principal reason for the prevailing notion is that infantry greatly outnumber cavalry, and that the square being their *safest* formation against cavalry, they are of course *taught* that it is absolutely safe. This notion has gradually spread from the greater number to the smaller, and thereby the moral strength of the infantry is increased, and that of the cavalry proportionately lessened. Arms of precision and increased range have also tended to increase the confidence of the one and to lessen that of the other. But with regard to these points, there is a good deal to be said on the other side. In the first place, the efficacy of rifle fire is very much overrated, being based on target practice at known distances. In the second place, whilst at a distance, but rapidly moving towards infantry, cavalry would be comparatively safe at any but the point blank range from the impossibility of judging and shifting sights rapidly, and, at the point blank range of say 150 yards, or so, the fire would be no more deadly than that of the old "Brown Bess." Of course, if cavalry stand still anywhere within range and remain stationary, they are liable to be destroyed. There was a great deal of talk at the time about the 93rd in line sending off, with a volley or two, a mass of Russian Cavalry by which they were threatened, but, in the first place the Russians were in a deep column formation; were not, I believe, advancing at any great pace, and thirdly and chiefly, the Russians retired because they had never had any intention of making a charge home and thought the sooner they got out of range, the better. In fact, they appear to have been miserably handled throughout the campaign, as witness the charge of our Heavy Cavalry Brigade at Balaklava against a great mass of Russian Cavalry which advanced to meet them, but pulled into a wall as they approached and were "chawed up" accordingly as the last joined cornet in the service would have predicted. The great rule should be that cavalry (except for a certain specific purpose which I will notice presently) must never stand still within range, and directly they are brought within range for the purpose of attack, must move rapidly but steadily on that point, which (as cavalry can easily cover 1,000 yards in between three or four minutes) it would not take them long to reach and as only during thirty seconds or less they would have been within point



blank range, I cannot conceive that good cavalry, properly led, should not, under these conditions, make good their charge and ride over and disperse the *best* infantry in line or even in square.

I consider then, that, on the whole, arms of precision have not, in any appreciable degree, affected the cavalry attack. Breech loading weapons may possibly enable infantry *occasionally* to deliver an extra volley when cavalry is within 200 yards but once within that distance, the safest course is forwards, and if this course is taken, the infantry *must* come to grief. There are two great safeguards to cavalry after entering what I call the dangerous part of the attack, *i. e.* the last 200 yards. One is that the moral effect of a change persevered in to that point, the appearance and sound of cavalry coming down at top speed, must to a certain extent, intimidate infantry, and every one who has been on service at all must have observed that directly infantry lose their coolness, they begin firing in the air. Secondly, the cavalry soldier himself is very much protected from the fire by his horse, and to bring down a horse within the last 150 yards, or so, is no easy matter, he may have one two or more bullets in him, and yet be able to keep on his legs, and perhaps continue his speed for that short distance. These points cannot be too much impressed on cavalry, as giving confidence, and I cannot but think that I have at least proved this much that, *infantry in line cannot successfully resist cavalry*, and that even in square infantry are not absolutely safe, and when in that formation their advance is stopped, their fire slackened, and they are exposed to telling fire from artillery.

Another point for cavalry is that combined with artillery they are much more than a match for infantry and artillery (supposing the ground to be tolerably open) because the latter are stopped on their march, and *may* be destroyed, the former can move as they please and *cannot* be destroyed.

If Generals *will* use cavalry in utterly unauthorized ways, as, for instance, at Woerth when the French cavalry charged infantry drawn up just outside a wood, of course they get their cavalry destroyed, and the public through the Press cries out "how useless are cavalry!" But where cavalry is kept to its legitimate uses, it is as useful in line of battle as ever, and in other respects, much more so, since long range weapons have come into use as I shall presently proceed to show.

I must now hark back, for a moment, to show when cavalry may be stationary, or nearly stationary within range. The simplest way will be to quote instances. In 1843, as the army under General Sir Charles Napier was approaching the battle field of Meeanee, certain configurations of the ground made it difficult to observe the whole of the enemy's position. The General therefore sent the Scinde Horse on ahead to form one long single-rank line, and to extend their files so as to show the formation of the enemy by drawing his fire. This, being performed,

intelligently was perfectly successful, and from behind this screen the General made his formations and advanced in order of battle.

Another instance. At the battle of Hyderabad, the General wished to bring up artillery across some very bad ground on the left of his line unobserved. This was done behind a screen of cavalry which stood as a target, whilst the sappers were cutting passages for the artillery over ravines. With regard to either cavalry or infantry, it *may* be necessary, for the purpose of gaining some object, to present a body of troops as a target to the enemy, either to gain time, or to conceal a movement, but these are the only cases in which I can conceive it necessary for cavalry to remain stationary within range.

I will now go on to show, in few words, how cavalry has become *more* important to an army since the introduction of long-range weapons than before.

The fact of the increased range has forced armies to engage at longer distances, to have their reserves further back, and to show a greater extent of front in consequence of shallow formations. This makes changes of front and reinforcements of weak points more difficult, and here comes one of the great uses of rapidly moving cavalry. I have also very little doubt that this necessity for speed, will necessarily bring into the field what to us is a new description of force though extensively used in the American War, *viz.* Mounted Infantry a most useful force considered as infantry, but if attempted to be introduced in supersession of cavalry, as proposed in a pamphlet some years ago, an utter and ruinous mistake.

The British public are continually taking up altogether false views with regard to cavalry and military matters generally, and the worst of it is that the Press which endorses these views, or expresses them, is so influential, that it is difficult for the authorities to make an effective stand against it. In the Prusso-Austrian War, the conclusion arrived at by the public seemed to be that the whole art of war consisted in having a needle-gun, the rapid movements and accurate combinations of the Prussians being quite ignored. In the American War the conclusion arrived at was that there were no troops like volunteers. In the Franco-Prussian war, the conclusion arrived at was exactly the reverse. In the Franco-Austrian War cavalry was made very little use of, no doubt from the incompetence of the Commanders on both sides. The public at once drew the conclusion that the day for cavalry had gone by. The American, Austro-Prussian and Franco-Prussian Wars sent round the Public Weather-cock to the opposite quarter.

My own idea is that the present is pre-eminently the day for cavalry from the vast extent of ground covered by modern armies. They are the eyes and ears of an army and the greater the extent of ground covered the more need of eyes and ears. Rapidity of movement and independence of support enable cavalry to gather information at long

distances from its main body and in proximity to the enemy with comparative immunity. They collect and send in supplies, destroy telegraph wires, cut off convoys and messengers and convey intelligence of all the movements of the enemy. The army, therefore, which is strongest in cavalry and most intelligent in its use, will have an immense advantage both in subsisting itself and saving its own depots and in intelligence of the enemy's movements, probable plan of campaign, &c., particularly, whilst the two armies were distant, and as they approached by guarding against surprises, manœuvring towards the enemy's rear and threatening his base line, to say nothing of their uses in line of battle.

A plan carried out formerly in the Bengal Light Cavalry, though I believe, discontinued for the last forty years, has often struck me as a most excellent addition to the organization of Light Cavalry.

It consisted in having two light guns attached to every cavalry regiment, called Galloper Guns, and forming an integral part of the regiment, and commanded by one of the subalterns of the regiment. I believe this organization was adopted in Lord Lake's time, who was in the habit of making long forced marches with his cavalry and galloper guns and beating up the enemy's camp when supposed to be far distant.

There are several other points which might be gone into on an essay of cavalry, and should not be omitted to render the essay complete, such as picketting, training of remounts, best breed of horses, &c., but this paper is already so long that I dare not write more, so will conclude by a few further remarks on the subject of Cavalry as an intelligence department. This is a most important matter, and the education of a certain proportion of men in every regiment, selected for their particular aptitude and general intelligence should be no longer delayed.

One of the majors or a captain might be selected for the superintendence of this duty, and a proportion of subalterns, non-commissioned officers and privates selected for this work, any man found deficient in intelligence being exchanged. They should be divided into parties of three or four, and sent out into the country into different directions, the time of their absence from head quarters being defined. On their return, the head of each party should show a rough sketch of the country traversed, with a concise account of the approximate distance covered, the general features of the country, and any particular facilities or obstacles to the movements of different branches of the service over the country traversed, the remaining men of each party should also make short notes independently, and in order, that they might learn to do these things in the simplest and best forms, the whole body of scouts should, three or four times a year, go out into camp under a garrison instructor or other staff officer qualified to teach them their various duties. They should also, whenever feasible, be practised, from long distances in observing bodies of troops and estimating their numbers. Thus would be formed, in every regiment, an excellent body of scouts, invaluable to the commander of an army and to the commanders of re-

giments, and from this nucleus, the numbers of scouting parties might be indefinitely increased, picquets taught how to patrol intelligently beyond their videttes, and the efficiency of a regiment incalculably increased.

I append two or three quotations from Hozier's "Seven Weeks War," illustrating the working of cavalry under different circumstances.

#### Advance to Brünn.

"As soon as the columns got out of the town, the hussars spread themselves out over the fields by the side of the road, and studded the country with horsemen. Some went pushing through the corn, others galloped forward to gain every piece of rising ground, and, from the summit, to scan the country beyond. Every wood was carefully beaten, and every village inspected by the nimble horsemen before the main body approached."

#### Advance to Brünn.

"Here the road ran through a narrow defile, with high banks covered with plantations, and the houses of the village standing across the pass would have formed a strong position for the Austrians to hold. On approaching the village, the cavalry was halted, and the riflemen were sent for to beat through the wood and push in among the houses."

The crowning and clearing of the pass is then described, and when the defile was passed, the dragoons again took the lead, spreading out again over the country.

#### Tobitschau. Attack of an artillery train by the 5th Cuirassiers.

Bredow, under cover of some undulating ground formed his regiment in echelon of squadron for the attack of the guns. The first squadron he kept towards his right to cover the flank of his attack from any Austrian Cavalry which might lie in that direction, the second and fourth squadrons he directed full against the front of the battery and supported the second with the third as a reserve.

\* \* \* \* \* "When within a few hundred paces of the battery they broke into a steady gallop, which increased in rapidity at every stride that brought the horses nearer to the Austrian line. All the time of their advance the gunners poured round after round into them striving with desperate energy to sweep them away before they could gain the mouths of the cannons."

\* \* \* "The flank squadrons bending a little way from their comrades made for the end of the line of guns in expectation of finding there some supporting cavalry. The two centre ones went straight as an arrow against the guns themselves and hurled themselves through the intervals between them upon the gunners."

Eighteen guns, seven waggons, one hundred and sixty-eight horses with one hundred and seventy prisoners fell into the hands of the Prussian force. A noble prize to be won by a single regiment. *It lost only 12 men and eight horses.*

I now conclude my sketch. I feel that I have not said a tenth part of what might be said on this interesting subject, but anyhow I have made a beginning, and I hope other and better cavalry officers may take up the subject, and then I shall not have written in vain.

T. R. SNOW, *Colonel,*  
*Bengal Cavalry.*

*Moradabad, 3rd February 1872.*

---



## IV.

**Remarks on organization of Native Infantry.**

IN No. III Journal of the Proceedings of the United Service Institution of India, Colonel C. Ross has proposed a new organization for our Native Infantry, and in so doing has forestalled me in submitting a proposal almost identical.

I venture, however, to disagree with him on one or two points, and to add one or two paragraphs to the proposal. For convenience of reference I quote Colonel Ross' proposal.

1 Commandant, as at present.

1st Battalion Officer, 2nd in Command and Wing Officer, as at present.

2nd Battalion Officer, Wing Officer, Commanding Left Wing, as at present.

3rd Battalion Officer, to command one company of 150 men.

4th Battalion Officer, ditto ditto ditto.

5th Battalion Officer, ditto ditto ditto,

6th Battalion Officer, ditto ditto ditto.

1 Adjutant, as at present,

1 Quarter Master, as at present.

1 Surgeon, as at present.

Total 10 European Officers.

4 Subadars, as at present, 1st and 2nd Class.

4 Color Havildars, to be carefully selected, and well educated men, keeping the accounts, and working the details of the company, at Rs. 80, each.

20 Havildars, at Rs. 20, each.

40 Naiks, at Rs. 15, each.

20 Lance Naiks, sepoy on probation for promotion with an increase of Rs. 2 on sepoy's pay.

600 Sepoys, as at present.

This differs from the present organization chiefly :—

In the division of the battalion into four companies instead of into eight. In the addition of two extra officers holding the position of the present Wing Subalterns, but exercising a more direct command over a portion of the regiment. In the decrease of the Subadars from eight to four, the entire removal of the Jemadars, the substitution of four Color

Havildars on large pay as the working men of the companies, the diminution of the number of Havildars, and the institution of paid Lance Naiks. The Color Havildars, he says, might be called Jemadars, but should be the working men of the company under either denomination. It will be perceived, that if these men were Color Havildars, there would remain only four commissioned officers in the Native ranks with the regiment. This appears to me an error in both a political and practical point of view. The dignity conferred by a commission, the privilege of a chair, and the title *Jemadar Sahib* are highly prized by Natives. They act very beneficially while the men are with the regiment, by raising them at once above their quondam equals in the ranks, and impressing them with a sense of their own superiority, and the responsibility the position confers, and these honors accompany the native officer to his village, where they not only give the actual possessor a higher social status, but enable him to transmit a certain portion of his dignity to his family, thus distributing through the country a class of men holding influential positions in village communities, who are more likely than almost any others to be well disposed to our government.

The organization under review would at once do away with three-fourths of these men, and would at the same time deprive the native ranks of three-fourths of the highest prizes to which they can now aspire, and that too when the duties of a soldier are daily becoming more arduous.

But besides the political bearing of the question there seems to me to be an inexpediency in this proposal in a practical point of view. These working men, whether styled Jemadars or Color Havildars would, in a great measure, be fixtures at head quarters, and would not be available for commands or detached duties of any larger portion than a Havildar's party should require to be detached. In the Punjab Frontier Force, where there is a great deal of outpost duty, and in many other stations, one Subadar would almost always be engrossed by this duty, should another be sick, and a third absent on urgent leave or furlough, there would remain but one native officer at head quarters available for station and regimental duties, or for any emergent call to detach another officer. The working men, if Jemadars, would certainly be available for station and regimental duties, but furlough and sickness would affect their number also, and even under these circumstances, think, there I would be found a paucity of native officers to perform those duties which Havildars, although more carefully selected, would be unfitted to perform.

There seems too a certain awkwardness in the position of the Havildar who would act as Jemadar during the working man's absence.

In my opinion, it would be better to have four Jemadars on Rs. 35 each, and four Color Havildars on Rs. 25 each. This would increase the cost of the regiment by Rs. 120, but would still leave it below its present cost. I would make the Color Havildars the working men of



their companies, and if my reasoning is correct, there would be no fear of the Jemadars being mere idlers. It must be remembered that even then there would be only eight men to perform the duties which are now distributed among sixteen. The number of native officers retiring would be double that which would occur under Colonel Ross' proposal, and would serve to keep up that influential class to which I have before adverted, and a clever, ambitious man might still look forward with some confidence to gaining a commission with its privileges.

Colonel Ross, it will be seen, proposes to style the officers in charge of companies "Battalion Officers." The name I had proposed giving them was "Company Officers," and considering their duties, that still seems to me the more appropriate title.

While on the subject of the officers I would suggest, that the Wing Officer should in virtue of his position, rank as third senior in the regiment, this would do away with the anomaly of a wing officer detached with his own wing being possibly commanded by one of his own company officers, an anomaly which might occur even when he paraded his wing for instruction, etc.

In the scheme under review, the following proposal occurs relative to terms of enlistment:—

"That the first term should be extended to four or five years, that the first good conduct rupee should be given at the completion of that term, when every man should be again enlisted for a term of three years, and so on, getting an extra rupee each term."

1. This places no limit to the number of times a man may get increase of G. C. pay, thus a man of sixteen years' service would get Rs. 12, an increase in the cost of the regiment, which Colonel Ross has omitted in the estimated cost under his proposal.

2. It moreover still leaves the lowest grade very badly paid.

3. There is no provision made for the loss that would accrue to a man of say thirteen years' service whom the commanding officer did not see fit to re-enlist.

1, I should prefer making each term of service four years, giving Rs. 8 for the first term, Rs. 9 for the second so on till Rs. 10 was reached, beyond which I would not go. This I believe would make the service more attractive without exceeding the expense to the State.

2. This would start the recruit with better pay.

3. I would grant to such men who wished at the expiration of each term to re-enlist, but were refused by the commanding officer, a gratuity of one month's pay for each year of service, thus at the end of his second term a man so discharged would get  $9 \times 8 = \text{Rs. } 72$ .

This would enable commanding officers to get rid, with less compunction, of men who were manifestly unlikely to serve beyond their fifteen years, and would ease the pension establishment without hardship to the individual.

There is one other point I would urge, which would, I believe, prove a very great boon, and that is a free kit to each recruit on joining. At present the first year of a recruit's life is one of continual struggle. Not only has he to learn his drill and duties, but his pay is so heavily mulcted to pay for his Half Mounting, that he is unable to set himself up well in cooking pots or clothes, or to afford himself any small luxury in the way of milk or goor or meat. He thus becomes disgusted with his career at its very commencement, and only looks forward to the time when he may claim his release. The cost to Government would not be large. Placing the value of the kit at Rs. 20, and allowing 20 recruits per annum, a number, I think, sufficiently large under four years enlistment terms, the annual cost to Government would be only Rs. 400.

H. C. P. RICE, *Capt.*,

*1st Sikh Infantry.*

## V.

**Lecture on the Profession of Arms.**

*Delivered to the Soldiers of the Rawul Pindee Garrison, April 8th, 1872, by Major Arthur Cory, B.S.C., Brigade Major.*

WAR, the purpose of the profession of Arms, is based upon certain instincts which humanity only shares with all the forms of life with which we are acquainted on the earth.

It is hostility, the spirit of enmity, seeking vent in action.

It is, in its most elementary and vital principle, not only independent of reason, but opposed to it in many of its aspects.

Whence those instincts spring, and why they are so deeply and universally implanted in the nature of all sentient creatures, are questions beyond the province of our present enquiry. But it is essentially necessary in considering the rules which guide the conduct of war to bear in mind its origin, that it is born of the passions and not of the brain, for this remembrance will be as the index needle of the compass to the chart we peruse, without which enquiry would but lead us astray.

The object of War, is primarily and broadly the destruction of life in the persons of those against whom the sentiment of hostility is aroused. Its art is to effect this with the greatest certainty and speed, and with the least cost and danger. Its science is the reduction of empirical rules, *i.e.* rules taught by experience, to a system which may be explained to, and learnt by the inexperienced through precept and instruction.

But although war has thus its primal causes beyond the dominions of reason, the intellectual faculties are immediately brought in to aid its purposes when once they have been engendered; unreasoning as the passions in themselves are, they enslave the brain by their power and energy, and compel it to their service. Not only do they do this but in their turn they stimulate it and augment its capacity, and the men who have most imperishably engraved their names on the iron tablets of war, are the same who in all ages have been acknowledged the first in mental supremacy.

In certain phases of public opinion which may be marked on the roll of history as recurring simultaneously with those lulls of peace which intervene between the cycles of contention, War is sometimes characterised as an exceptional and unnatural state, and condition of mankind. Such opinion can only be formed by the most narrow and circumscribed perception, for the truth is that Nature herself is one eter-

7

nal warfare. Throughout the entire animal kingdom on land or in ocean we find it, not only ever present, but the ruling power on which the whole scheme depends. There is no law so wide, none so invariable, as that the destruction of life in some form is the very condition of existence to another, and viewing the world as a whole and especially as the habitation of the human race, there is no period discernible in which it can be asserted that war has ever ceased on its surface, and no period in which any nation has been absolutely free from the dread of it. The apprehension points to the perpetual presence and sense of danger, and shows that at times of even supposed peace, the spirit of hostility is but latent, and that the smouldering embers of war are ever ready to break into a flame. The provisions of purely civil society for the maintenance of internal order are based on the same considerations, and the axiom is assuredly true and incontestible, which affirms that force in some shape or another is the real foundation of order and safety.

We can still trace on the fading records of extremest antiquity the same characteristics of our race which distinguish it now, the same aspirations, and the same infirmities, the virtues that develope into vices, the passions that grow into powers either to ennoble or to destroy; the emulation that ends in envy, the indignation that culminates into hatred, skill that ripens to fraud, and desires that fester into corruption; are as rife now as they were before the flood, and these things are the springs of war, and it will last so long as they last.

If then the theorists who lose themselves in metaphysical speculation concerning a coming millenium of peace would really face the logical conclusions of their own arguments they could not fail to see that the cessation of war must involve the extinction of the present moral attributes of men, a consummation which "if devoutly to be wished" is certainly not imminently probable. But nations are fortunately truer in their instincts than philosophers in their wisdom. They feel that to secure peace, safety and such happiness as may arrive to the world it is necessary to be prepared for war, and this feeling is the origin of armies.

In all times, then, communities set aside from amongst themselves a section whose exclusive duty it becomes to protect the remainder and to enable them to follow without fear of disturbance or interruption, the various vocations by which in peace, wealth and all its comforts, and advantages are acquired, and to accumulate their results safe from violence and spoliation. This section grows in number, in importance and in power, with the nation to which it belongs. Its rise and growth is the unerring indication of the advancing power of a country, as its decadence, and decline in popular estimation, is a certain presage of decay in the parent state. It forms a class more peculiarly distinctive than any other national subdivision being governed by exceptional laws. It is influenced in great degree by a tone of thought and habit of life fostered by circumstances which pointedly dis-

tinguish it. Its rules of governance are far more stringent and arbitrary, and in all mundane matters, its aims are loftier, and its sentiments more exalted than those of any other portion of the community.

For these reasons the comparatively small section which adopts the profession of arms, universally numbers amongst its members the highest in the social scale of any land, and possesses (in a healthy condition of the body politic) greater proportional influence on a nation than any other constituent. It is true that in the stage of immaturity the church may compete with it for temporal power, and in the stage of decline, the mercantile interest may outweigh its influence on State-craft. But both these conditions are fraught with evil, and public integrity will be invariably seen to tarnish as the warlike sentiment at the heart of the people is seen to wane.

It is therefore the most honourable calling wherein any man can serve his country. Like all other human institutions it is subject to adverse criticism, occasionally just, inasmuch as nothing of man's work is absolutely perfect, but more often most unjust, arising from mistaken or partial views, the shallow prejudices of ignorance and the blind lust of wealth. With the progress of general enlightenment the truth, with respect to this section (in which of course is included all descriptions of armed bodies, sailors or soldiers) will the more and more prevail. Our progress in public estimation has of late years been marked not only in our own country but throughout Europe. It is beginning to be understood that, class for class, there is none more loyal, none more honest and none more intelligent than the army, and we may confidently predict the time when to belong to it will be the highest aspiration of every manly youth in any rank throughout Great Britain.

In considering the art which the soldier sets himself to acquire there is one remarkable principle to be noticed, which distinguishes it at once from any other. It is subject only partially and in its very earliest stages, to any absolute or abstract rules, and the reason is this that the physical causes which can be governed by material means are not the only, nor even the principal agents in war.

For what are styled moral influences are still more powerful in determining its issues. Courage, Fortitude, and in fact Pugnacity are the real disposers of the fate of battles.

Over and over again courage has prevailed against tactical skill, and stubbornness in fight has defeated the most careful and approved strategy, and in the history of no nation does this truth appear more conspicuously than in our own. Were it otherwise, were it a mere matter of calculation of the number of men, of guns, or of horses opposed one to another, the result of a conflict could always be predicted beforehand, but in reality the events of a campaign are often as unexpected as they are important and war has been not inaptly termed a succession of surprises. It is true that the greatest master of the art the world

ever saw, Napoleon ; said that " Providence always sided with the largest battalions," but no man ever falsified the maxim more often than he himself did , and its refutation was never so complete, nor so crushing as in the eventful battle which closed his own marvellous career, the battle of Waterloo.

All soldiers competent to judge, and all writers who have given us accounts of that day concur in describing the array of the French under the consummate handling of Napoleon, as evincing the most masterful and brilliant display of tactical ability ever seen. The commencement of the action was a spectacle like that of some magnificent review. His troops were devoted to his cause and person, they possessed the most implicit confidence in his genius and leadership, they were full of valour and hope, and they were for many hours superior in numbers.

Yet they were beaten. Beaten by patient and invincible fortitude by sheer courage and stern determination.

These then are the qualities that are of the first importance and the highest value to soldiers. They cannot certainly be imparted by instruction, but they can be fostered and strengthened by cultivation and by study of the brilliant examples, our countrymen especially, have bequeathed to us so often. It is impossible to dwell too forcibly on their importance in studying our subject. For the very tendency of study, unless most heedfully supervised, is naturally and inevitably, to magnify the consequence of the special materials it deals with. The purely physical aspects of the art on which the attention is long and closely fixed, will always be apt to engross the faculties.

But as a painter after working at the details of his subject on the canvass, retires to a distance to observe the general effect of his picture, so the student of *our* art must lift his eyes from his drill book, his plans and his treatises, and note from the far record of history the vaster effects and broader coloring of the great moral forces which sway the destinies of War. It is by these means that the genius of the greatest Commanders has been enabled to produce the extraordinary results we read of.

Reverting to the remark made just now, on the calculation of the events of a campaign, on mathematical principles, there was a time when the armies of Europe were really manœuvred as though they were chessmen, when conflict was rarely hazarded, when strategical considerations alone guided the steps of commanders, and when in point of fact a force that was considered compromised by inferiority of position or numbers, actually did surrender or retreat according to fixed rules without suffering defeat.

Our own famous Duke of Marlborough was the first to shatter this system, and his example was successively followed by Frederick the Great of Prussia, and by Napoleon. These great men saw and apprecia-

ted the vast power exercised by audacity in fight. It was far more by this quality than even by the skill which directed it that their victories were gained. These, their swiftness of movement, and their stern deadly eagerness to close with their foe, were the spells which bound victory to their standards. And it has always been so.

Perhaps one of the most remarkable instances that can be cited of this truth is the career of Lord Clive. He was noted as a boy at school as being "out of measure addicted to fighting," and his subsequent life in India may be most accurately summed up in the same words. One of his battles well known by name, that of Plassy, is so forcible an illustration of this portion of my argument, and is so graphically described by the historian Orme that I cannot resist the temptation of trying to exhibit it to you.

In Volume II, Page 172, he says.\*

\* \* \* \* \*

This is one of the most brilliant examples on record of valor and enterprise, for although, as is shown in the narrative, treachery and dissension in the enemy's camp aided the results of the victory, it is certain, that had any weakness shown itself on the British side, had any reverse occurred to them during the action, the traitor Meer Jaffir would have infallibly taken part against them. It is therefore to the heroism and dauntlessness possessed in an inordinate degree by Clive and his handful of followers that we must ascribe the success of the day which founded our Indian Empire.

Remembering this always ; the next step in our study is to learn to employ these great moral forces in the manner, which will place them most at an advantage, so as to waste nothing of their power and to give them in fact the most favorable opportunity of manifesting themselves.

Now in approaching this part of our subject, we must observe the extraordinary number of considerations which it is requisite to keep perpetually in view in order to place an army in the Field in a thoroughly efficient state. This renders the science of War simple as it is in principle, in practice one of the most complicated problems ever offered to human ingenuity. It is not too much to say, that an army really complete, is an Epitome of the State and that its government, guidance, and maintenance include in one grasp, all the intricacies of national administration.

To aid the imagination in taking a comprehensive view of the matter we will first view it, as presented in a rudimentary state.

Suppose two men to quarrel and as a consequence to fight. In the struggle one finds himself inferior, we will say in bodily strength, yet

---

\* The extract is omitted here to economize space. The Work is to be found in all our Regimental and Station Libraries.

he may be more active and thus be enabled to keep his adversary from closing, and to prolong the conflict. Being swifter he may seek to postpone the fight and by biding his time and opportunity, to re-assail his enemy at an advantage. He may surprise him sleeping or unarmed and unprepared. He may lie in ambush for him, he may steal his food and weaken his foe by hunger, he may arm himself after a superior fashion, or finally at some supreme moment he may prevail by sheer passion and zeal for the fight.

The parallel will be found to hold in the quarrels of nations as in those of individuals. But when large numbers of men are actuated by a common motive, and attempt to combine their efforts in order to accomplish together a purpose shared by all, another element springs into existence. It is clearly essential that, in order to gain power by adding the strength of one man to that of another, the efforts of both, should be put forth simultaneously, otherwise nothing is gained. For instance, if two men pull at a rope, but not at the same instant, the one making his exertion at the time the other ceases to do so; then the effect produced is plainly that of one man's strength only. It is when at a given signal both pull *together* that the added power makes itself visible. Similarly when the combined force of many thousands of men is to be concentrated on one object the combination can only be effected by some arrangement which shall give a common and simultaneous impulse to all their acts and movements. And this arrangement in armies is called Discipline.

Discipline is therefore nothing more nor less than concerted action.

All its rules and observances are simply the means whereby the power of very large numbers of individual men is accumulated and welded into a mighty force. The more perfect the discipline, the more absolute the unity which prevails throughout the mass, the stronger the army and the more formidable the nation of which it is the bulwark. This then is the second great quality, we have to observe, Courage being the first—the Soul of War. Discipline is as the brain which gives it movement, direction, and unity.

But while it would be difficult to insist too strongly on the absolute necessity of immediate and implicit obedience to orders, which is the essence of discipline it should never be forgotten that its subjects—we soldiers—are not inanimate instruments but are intelligences capable of independent action, which may be of the highest value, when employed not antagonistically to the common object. It by no means follows that because obedience must be implicit that it should also be blind. On the contrary it is a great additional strength to a force that each individual composing it should appreciate the object sought, so that where orders cease the understanding shall take up the matter and work for its fulfilment.

Drill for instance is that item of discipline which rules the actual



setting in motion of the men of an army. It is obviously more essentially dependent upon exact and instant obedience than any other portion of a soldier's duty. Yet even here, intelligence though suspended in its active exercise, to any greater degree than is necessary to understand the words of command—should never be absent. And if this is true now, it will be truer still of the future.

Within a comparatively recent historical period the bulk of the English Infantry, famous then as now for steadiness in action, was armed with pikes and spears that could of course be used only in actual hand to hand combat; the light troops, (answering to our modern skirmishers) were archers armed with bows and arrows.

The English bowmen were renowned throughout the world for their skill in the use of these weapons. The archer was said to carry three men's lives at his girdle, alluding to the number of arrows he carried and the almost certainty with which each shaft would strike down an enemy. But in these days it would be scarcely exaggeration to say that a cool and skilful soldier carries as many foes' lives in his pouch as he has rounds of ammunition. The ever advancing superiority of modern arms, the great improvement especially in the infantry soldier's peculiar weapon, the rifle, the great increase of skill in its use noticeable from year to year—its great range and rapidity of fire which have enhanced the need of individual intelligence for its effective use, all these circumstances combine to render it extremely probable, that movements in column, those by which one man's word can direct the motions of thousands, will be in progress of time unavailable in the field; that even lines will be greatly expanded, so as to enable each soldier to employ his fire to the best advantage, and in lieu of seeing actions fought as heretofore by great masses in restricted space, under the immediate leadership of one commander we shall find the great battles of the future, will be fought over most extensive areas of country in successive series of elastic lines.

In such situation any over-proneness to what is called centralization, *i. e.* the accumulation into one hand of all immediate executive authority would be a great evil. The plan of a campaign, and the design of a battle must emanate as ever from one brain, but the achievement of each step of progress, and the gaining of each rood of battle ground must be the work of the bravery and intelligence of the private soldier.

But it may be asked whether implicit obedience can be compatible with independent and intelligent action. How if the intellect of the subordinate tells him that the commands of the superior are unwise, and likely to be disastrous in their consequences? The answer is simple and is contained in an expression used above.

Where orders cease, the understanding should commence. Orders should be regarded as directed by circumstances of which the recipient may have no knowledge, or an imperfect knowledge.

When they are contrary to his notions of right and wrong, they should be looked upon in the same light with regard to his will, as would any insuperable natural obstacle appear to his movements. A man, for instance, desires to enter a certain town which seems near to him : he finds his direct path to his object barred by a wide ditch and a high wall. He would naturally skirt these till he should arrive at a bridge and gateway whereby he could pass in. It cannot be said of him that he is, in doing this, acting against his intelligence, because the road may be a long way round from the point whence he started to that he wishes to gain ? In the same manner he should regard orders which he cannot comprehend as imposed by some necessity which he does not perceive, which stands in the way of the (to him) apparently direct road to the object sought, and he should consider that to contest the instructions of his leader or to disregard his orders would be simply tantamount to walking blindly into the ditch.

In this way the most complete and absolute discipline may nevertheless be perfectly compatible with the highest intelligence, and indeed the more intimately these conditions blend, and supplement one another, the more formidable the power they create.

The soldier then should never allow himself to fall into the delusion that he is a cypher or mere machine, irresponsible and unthinking, or encourage himself in habits of idleness and want of reliance on himself because he has to obey orders which enable his comrade's exertions to combine with his own for their common advantage. If he himself should never fall into this error assuredly his superiors should never do so. In the illustration used it is clear that if the man were not treated as a rational being, were never told that there was a town behind the ditch and wall, and were not informed that he was to enter it, the bridge and the gate would have no significance for him and he would pass them by.

In truth like every other earthly virtue discipline itself may be carried to a vicious and mischievous extent, if it be suffered to impair the power which it should aid, and which reason confers on man.

This should be guided but never destroyed.

Not unfrequently instances have occurred in warfare carried on in wild and barbarous countries where dense forests and dangerous morasses impede movements and forbid combined action, where our brave and most highly disciplined troops have suffered disastrous reverses. These have generally arisen from too rigid an adherence to rules excellent in their way, but not adapted to the special position. The men have been too exclusively taught to rely on their united strength, so that when natural obstacles prevent their union, as will happen in dense jungle they have been unable to make the best use of each separate individual strength or skill, and have fallen before ignoble foes.

This brings us to the third great point for our consideration. If courage be the soul, and discipline the brain of an army, the muscles

which they rule, the members that compose its body, must be trained, strengthened, and moulded to their work.

Education, or the acquisition of knowledge is of two kinds, that which is learnt from the experience of other men, lived as it were in books and stored away for future use; and that which is learnt by every man from his own personal observation. As the stock of information to be acquired by this latter process, is absolutely inexhaustible, the man who adopts it will, if of average capacity and energy, probably in the course of his life, make some kind of original discovery which shall serve to augment the general stock of human knowledge. That too which a man acquires is generally far more distinctly remembered, and is more distinctly gained than by the study of books. But on the other hand no man's life is long enough in the present stage of human progress to enable him to dispense with those great facilities in gaining knowledge which books offer. In them vast stores of information are brought together into small compass of space and time. The experiences of a life time are conveyed in an intelligible but highly concentrated shape to other minds by means of a few small volumes which may be read and mastered in a few weeks or months.

To speak figuratively books may be likened to the paths, which our predecessors in any given direction, have made for us; enabling us to pass easily and rapidly over an explored country to a point whereat our own labors may profitably commence; without them, it would be as though we were compelled to hew our own way at starting, and were to reach finally a place which had been passed long before. While on the one hand, the mere scholar and exclusive student of books is apt to become a pedant and a trifler, seeing little of the real purpose and beauty of life's journey, the utterly unlearned man on the other hand never gets far enough, or high enough, on the uphill road to see any except the very nearest objects.

If the book worm then is liable to form erroneous judgments the thoroughly ignorant, are incapable of any, so the two methods of education should be combined, and if a man should read, and listen, still more should he watch, observe, and ponder in his mind the lessons which his eyes will continually present to his notice. To no class, does this truth apply more conspicuously than to soldiers. For to us no kind of knowledge comes amiss, no species of information is so trivial that it may not serve us at some time or another, no views however extensive are so broad that they shall not contain land-marks for our observation.

We have seen that an army is an epitome of the State; its necessities are so innumerable and so urgent, its interests involve so many varied considerations, its organization includes so many departments, that there is hardly a calling which is not represented in its ranks, and scarcely a gift or an acquirement which a man can possess that may

not be turned to its advantage. The draughtsman and the laborer, the miner and the musician, the engineer, the clerk, the doctor, the accountant, the mathematician, and the lawyer all find their places in our community. Indeed, the exigencies of the profession often demand, especially in war, that many of the qualifications for these vocations shall be combined in one individual, and the number of trades that an old soldier or sailor can turn his hand to at a pinch, is proverbial

A soldier then should let nothing escape his observation. As he is perpetually finding himself in novel and unexpected situations, so he should emerge from every one with some gain to his knowledge. As he, alone of civilized men is liable at any moment to discover that his life, and the lives of many others are in his hand, and dependent on his promptitude and skill, so he of all men can least permit himself to neglect the acquisition of any scrap of useful information.

The shepherd draws his knowledge of the weather which so materially affects the safety of his charge, from the faintest signs in the air and heavens, from the varying tint of the cloud, from the straw which marks the eddy of the wind, and from even more impalpable things; the hues of the distant hill, or the murmur of the stream as it falls on his ear, all these things have a significance for him and by which he may foretell the coming sunshine or storm.

The hunter too notes almost instinctively the slightest indications in the forest which betray the path of his prey, a broken twig, a leaf turned aside, a blade of grass whose edge has been barely gilt by the tinge of blood, the accent in the note of a frightened bird; these and such seeming trivialities are his guides, and the soldier in the exercise of his craft must be as watchful and wary as these.

War teaches her lessons right well, but something sternly, and he who would profit by them must have the eye and the ear of the shepherd and the hunter, with a heart and soul, all his own, the first that can never despair—the last that must aspire.

So far the ground is clear before us, but to our limited human natures and capacities no doubt a great number of problems which we cannot answer, present themselves. In such cases it is well for us if we can accept the doctrine of discipline as we considered it just now, believing that where our intelligence fails us, faith and ready obedience will guide us safely to the end. The question occurs to most of us, and will occur to men as long as the world lasts, why Force should be thus, as we have seen, the base of its condition.

Why should Life be cruel and why should Death  
Wait on each instant's course o'er the world's way,  
For all the myriads that drew their breath  
In rage or terror, preying on a prey?  
All live by other's pangs, pursue and slay,

While Hunger watches with a savage stare  
 To waste and still to crave and ceaseless sway  
 Who most destroy are strongest and most fair,  
 And pleasure's dearest haunt, is Rapine's crimson lair.

We wrest our baubles from some weaker hold  
 And no delight we own but has been bought  
 At price of other's suffering. Our gold  
 Is human agony stored up and wrought  
 In the red furnace of our strife. All thought  
 That is not sordid and that we deem brave  
 In rooted deep in love. The battle fought  
 That all must lose in turn, that none can save  
 Thus still the greenest herbage grows above the grave.

It speaks imperfect knowledge. But escape  
 In all this stern inexorable scheme  
 Throughout the universe in any shape  
 Is not, nor can life alter like a dream  
 Nor our reluctance stay the mouthless stream  
 That rises not on earth, nor sleeps on sea  
 But rolls its tide where all the ages teem,  
 With torrents swelling hoarse in agony  
 Of changeless acts, the atoms of Eternity.

No ! the broad records of the Wrong and Right  
 Are blotted never. As the signs in Heaven  
 That the All-grasping Hand doth fadeless write,  
 Upon the mighty scroll with flame engraven  
 In tracks of all the suns wherewith is paven  
 This vault that pens us. They will never change  
 If human eyes be weak or hearts be craven  
 They are not false, nor their great prospect strange  
 Because we cannot read, who dare to re-arrange ?

---



## VI.

**Camp Lessons : The Native Officers of our Indian Army.**

AMONG the many imperfections in our military system which the camp of exercise brought to light, few came so prominently forward as the incompetency of our native officers and their inability, we speak generally for there are many exceptions, to carry out satisfactorily the duties which they were reasonably called upon to perform. It will be the endeavour of this paper to satisfy all as to the correctness of the above statement ; and also to suggest some remedial measures of a simple and practical nature. And we make no apology for introducing this subject, as it is one on which the Council have called for a paper, and it is a question of great moment to the efficiency of our native forces.

We must, however, before discussing the competency, or otherwise of the native officers, understand what their position really is in the native army, and what are their real duties ; and to understand this we must look back to the system which gave us native officers. Previous to its re-organization, the native army was officered by British officers and its companies commanded by them, there was also an establishment of non-commissioned officers, and in these two respects the organization was similar to that of the British line, and the interior economy of a native regiment was carried on on the same system. There existed, in addition, in the native army a class and rank standing between the British company officer, and the non-commissioned officers styled 'native officers,' receiving commissions, a superior social grading and higher emoluments. The duties of these native officers were few and simple ; they were called upon to command companies on parade in the absence of British officers, to exercise a limited, almost nominal, authority over their companies in the lines, and to watch the interests of those under them, thus forming an additional link of communication between the sepoy and his commander, they were also expected from their superior and more isolated position to be free from the partialities common to non-commissioned officers living in daily intercourse with the sepoys, and to advise the British officers on matters connected with the social habits of the men. No technical responsibility devolved upon them, for beyond that of reporting signs of disloyalty or disaffection, the British commander was alone held directly responsible to his commanding officer and the government for all matters connected with the well-being and discipline of his company. So anomalous a position was thoroughly appreciated, and the recipient of the native commissions, in casting aside the daily duties and troubles of the non-commissioned grade fell gradually into the state of blissful ease and ignorance which was more or less intended to accompany what the promotion really was, a reward for long and faithful services.

Now, so long as the commission was considered as a reward and, no

executive responsible duties were attached to the office, no possible objection could be taken to it ; on the contrary, it was much to be commended, for it removed from a sphere of activity a non-commissioned officer whose decaying mental and physical energies were gradually unfitting him for active duties ; it rewarded with comfort and honor a deserving soldier ; and it gave to every recruit of the Company's armies the greatest possible incentive for good behaviour and faithful service in the pleasing prospect of ending his days under the grateful shade of his village fig-tree, the honored recipient of a liberal and guaranteed pension. But a time came when, after the Mutiny of 1857, it was found necessary to re-organize the remnants of the native army, and to raise therefrom another army better suited to the requirements of the State, and less liable to a disaster similar to that which had overthrown the old ; and foremost among the changes was the introduction of the so-called irregular system with the reduced establishment of British officers. This change caused no departure from the original model on which the old native army was organized, for, as in the British so also in the native army, there still remained two classes of officers—staff and company ; but where in the former native army both classes were recruited from the British race, and an additional native class existed, now in the native army the staff of the regiment was alone to be recruited from the British race, the British company officers disappearing to be replaced by the class of native officer recruited from the natives of India. What then would be the duties of the new class of native officers according to the spirit of the change ? and are we wrong in assuming that in replacing the company officers they were to accept their duties, and forgetting the ease and repose of their former position take up the responsibility and exhibit the zeal of the British officers whose places they were to take. This we think is incontestable, and there can be but little doubt, but that the true meaning of the change was to make the native officer the veritable 'company officer,' and give him a position analogous to that of the company officers of a British regiment.

Beyond concurring in the justice of this measure, it is not within the scope of this paper to discuss its policy, but it is fairly so to temperately inquire, whether the sense of the measure has been rightly understood and strictly enforced ; and herein it is a matter of regret to state that the results of such an enquiry are disappointing. The Camp of Exercise at Delhi too clearly showed that the extent of the change has not been appreciated by all to whom the carrying-out of details of organization are naturally entrusted, and this may in most cases be attributed to a too rigid adherence to the traditions of the past, too great a reluctance to admit of pre-conceived ideas as to the impolicy of the change being bent to give sufficient trial to the new system, and in some instances the material at disposal did not admit even of the trial. Here and there an attempt had been made to assimilate the position of a native officer to that of a company commander ; but in the greater majority of cases the native officer was still the nonentity he ever was. In all cases, however, the duties of command and detail devolved more or



less upon the British staff officers in addition to their primary and more important duties of instruction and supervision. So much is this the case in the native army that at the camp of exercise the scarcity of British officers was at once felt in the native army; and so much was their time taken up in regimental details that few could be spared for the instructive duties of the staff, reconnoitring, &c., and so slight was the assistance rendered by the native officers that they were almost considered an incumbrance to a regiment. No trust or confidence was placed in a native officer, not even to the extent of expecting him to perform unaided the simplest duties which any British non-commissioned officer would be thoroughly acquainted with. Had a picquet or even a sentry to be posted, it was necessary for a British officer, and often a field officer, to go and do it; was it necessary to detach a company or a half company to protect the flank of a column or to search a wood or a village, a British officer must accompany it; no line of skirmishers, no advance or rear guard, no small detached party, no picquet, not even a few files, could be left in charge of the native officer; the construction of the smallest and simplest defensive work required the supervision, and often the personal labor, of a British officer: yet all these duties can fairly be expected from a company officer of ordinary intelligence and reasonable experience. There was scarcely a day that the uselessness of the native officer was not in some form apparent; not a parade but that a call was made for a British officer to perform what would in the days of the old native army have been performed by the company officers. Further, it was clearly shown how very dependant every native officer was on the few British officers of his regiment, how utterly helpless and void of expedient he was when left to himself, and what was likely to occur if any unforeseen chances deprived him in a moment of emergency of the orders, not the advice, of the British officer.

In justification of this setting aside of the native officers, it may be urged, and very rightly so, that the native officers were unfitted for these various duties, and that in the short duration of the camp to descend to such generally-required individual instruction would have been beyond the powers of the divisional commanders and their staff. To refrain on the other hand from employing the British officers so as to ensure a correct working of the details, would have marred the success of the manœuvring and defeated the objects of the camp. In justification also of the native officers, let it be said, that their ignorance is the result of want of opportunity and want of instruction. From a life of ease and indolence they have been placed in a position of responsibility without any preparatory training or subsequent education, is it therefore a matter for surprise if when tried they are found wanting? The arguments on both sides are unanswerable, but to continue them would prove fatal on service if many casualties occurred in the British ranks. A change is inevitable; either we must revert to the system of the past, or we must gradually select and train our native officers for the position we wish them to hold. Let us select the latter alternative.

We are aware of the arguments likely to be brought up against what we counsel : the impossibility of training a native into an intelligent company officer ; the absurdity of ever expecting a native officer to be other than a mere machine ; the want of talent or education : the generally indolent and careless habits of a native ; the danger of entrusting a native officer with too much authority, etc., etc. These with the exception of the last which can easily be watched, are but traditions, the last signs of a doggedly conservative adherence to the customs of bygone ages : to perpetuate them is to ignore the history of this empire, and to combat them it is only necessary to consider what excellent and faithful service is performed by natives in all the other departments of the state ; a simple reasoning by analogy would prove that the rudiments of the military art and the technical duties of a company officer are quite within the grasp of the intellect of an ordinarily intelligent native. The necessity also of having good company officers is daily becoming more clear ; it is a fact acknowledged beyond dispute that the perfection of an organization depends much upon the careful training of its subordinates ; that the success of military operations is greatly enhanced by the trained intelligence of the inferior officers, and we see with satisfaction the efforts made at home and abroad to instruct the regimental officers, and the cheerfulness and zeal with which the appeal to study is responded to : yet with all this before us we are leaving a cruelly weak point in the weakest part of our armour. We feel that some endeavours are being made to improve not only the class but also the intelligence, of our native officers ; but having adopted the system of substituting native for British officers, we think something more general should be carried out, and an authoritative system organized with the view of obtaining and training good company officers. Two conditions we consider essentially necessary : 1st, That it should be impressed upon the minds of all in authority that the British officers of a native regiment occupy solely the position of staff officers, attached to the regiment for purposes of instruction, supervision, and example ; and the native officers are the *bond fide* company officers. 2nd, To insist upon every native being physically and mentally fit for his position ; and that the native officers commanding companies are at all times able to *command their companies in any position in which they might be placed*. Both of these conditions are imperfectly fulfilled in our present army.

The position of a native officer may be easily defined by authority, but unless he proves himself at all times equal to the duties of his rank he will never be entrusted with them, or, in other words his true position will never be acknowledged. To ensure this primarily it will be necessary to modify to a great extent the system upon which promotion is now made. It must no longer be a matter of seniority, or a case of rewarding long and faithful services, for these other rewards must be found : it must be a system of pure selection, the selected non-commissioned officer must be the most intelligent and smartest of all of his rank, the best acquainted with his duties

and the best instructor, the man who by his conduct and zeal gives promise of still greater energy, application and fitness for responsible employment ; he should also be of an age which will admit of the best years of his life being passed in the commissioned grade. Promotion should be considered the exception, not the rule, and though for a time such a ruling might cause some discontent among the disqualified candidates ; the qualifications necessary for the higher grade will incite the majority to compete for the prize, and the others to be satisfied that it is beyond their reach. In carrying out this system, it would run much chance of failure, and would command no confidence, if left to the arbitrary discretion of commanding officers, and to obviate this we would strongly recommend the introduction of station boards of examination, similar to that assembled from time to time to test the fitness of British officers for their promotion, to be composed of selected officers, and to test the candidates critically, both by verbal and practical tests, according to such rules as the military authorities may decide. These examinations should be of two standards, the lower to pass candidates for the commissioned grade, the higher to qualify them for promotion from the lower to the higher grade, they should, in the first case, comprehend a practical knowledge of elementary and company drill, the construction of fascines, gabions, rifle pits, shelter trenches, &c., a thorough knowledge of the duties connected with the interior economy of a company, and the duties on guards, picquets, sentry, &c. ; in the second case, the examination in drill should be more searching, and embrace battalion drill and outpost duties, it should also test the candidate's knowledge of the articles of war and the standing orders of his branch of the service, and it should ascertain his knowledge of the tracing and construction of simple field works, the defence of houses, posts, villages, bridges, &c., in both cases a knowledge of reading and writing in one language, Oordoo or English preferred, should be insisted on as well as a good knowledge of arithmetic. Candidates for the commissioned grades, once they had passed their examination, should be considered eligible and entitled to succeed to vacancies by seniority subject to certain conditions of conduct and age ; similarly once appointed, independent of the examinations the further promotion should also be subject to certain conditions of conduct and age.

Once commissioned, the young native officer should not be left to his own resources, but rather made to feel that he was undergoing a period of probation ; every opportunity should be afforded him of gaining instruction, and every encouragement given him in learning all points connected with his duties. In each division a native class might be attached to the classes of garrison instruction at which all junior native officers should be sent to gain the practical knowledge of tracing field works, and to accompany the British officers when reconnoitring, so as to learn the points which should be noted in the event of their ever being called upon to make written or verbal reports when sent to examine a country more accessible to native than British officers, valuable in-

formation might often be gained through the medium of native officers, many of whom have natural talents well fitting them for an intelligence department, which talents would be greatly assisted and developed by a little methodical instruction. It would also add very greatly to the success of the above system, were direct commissions given in a small proportion to intelligent native youths of respectable families, and to improve the position of the native officers by the grant of a command allowance to those actually commanding companies, and by readjusting and enhancing the rates of pay of the two different grades. The former could only be possible by the formation of a cadet college, which need not be expensive, where the youths could be trained, and from which they could be gazetted to regiments of their own caste and nationality ; and the latter might be advantageously arranged for by the reduction of the number of companies from eight to six, and a corresponding reduction made in the number of native officers, and to a modified extent also in the non-commissioned grade. No harm need be anticipated from this measure, provided, the effective strength of sepoys is not reduced, for, in many respects six companies of one hundred sepoys each are more convenient tactically than eight companies of seventy-five : and it could not be denied that a lesser number of highly trained men would be far more useful to the State than a greater number of men who cannot be trusted out of the reach of a British officer's voice.

It may also be urged against the proposals contained in this paper, that it is impolitic to train natives to any extent in an art which at any time they might use against us, but with regard to the training of a native force all ideas of disloyalty and infidelity to the colors must of necessity be set aside. If a native army is to be kept up at all, it is an undoubtedly sound policy to ensure that in discipline armament and efficiency, though not in numbers, it should be equal to the troops with which it may be called upon to act ; otherwise, by disregarding the warning of a distinguished foreign general, that the indiscipline of inferior troops extends to the superior, the stability of our British troops might be engendered if called upon to stand side by side in line of battle with men from whom they could derive neither moral nor physical support. Besides which, if such an argument were sound, it would be simpler and cheaper to reduce the native army into orderlies and watchmen.

FANTASSIN.

## SELECTIONS.

## I.

**The Game of War.**

ON Wednesday, (March 11th,) Prince Arthur delivered a lecture at the Garrison Instructor's Class-room, Dover, on the "Game of War," It consisted of a remarkably lucid description of the German "Kriegspiel," and was designed to excite an interest in the subject among his Royal Highness's brother officers in the garrison and district. Among the officers and gentlemen present were Sir Howard Elphinstone, K.C.B., Lieutenant Fitzgerald, Colonel W. Parke, C.B., Commanding at Shorncliffe; Colonel M'Donald, Assistant-Adjutant-General; Colonel Mayne, Assistant-Quartermaster-General; Mr. A. W. Downes, District Controller; General Dalzell; Major Blenkinsopp, Superintendent of the Riding Establishment, Canterbury: Major Crookes, Mr. T. Humphreys, &c.

Colonel M'Donald, as President of the Dover Association for the discussion of Military subjects, introduced the Royal lecturer. He said he hoped he might be permitted to observe that the honour his Royal Highness had conferred upon them by being present on that occasion, and by his introduction of a subject known only by name to most in that assemblage, would give a stimulus to the institution it had never hitherto possessed.

Prince Arthur, who was received with applause, in opening his lecture, said he had no doubt that many present had been asked. "What is the Kriegspiel, and how do you play it?" He would endeavour to answer these questions as briefly and clearly as he possibly could, and if they would follow him through some details, which he hoped would not prove wearisome, he felt sure they would agree with him that the game might be of the greatest use to all who were desirous of earnestly studying their profession. They must not imagine that it was an amusing game, not such a recreation, for instance, as chess or whist. The Kriegspiel was really a study, and a complete study, of the art of war, and to play it properly required great attention, while to act the part of umpire close reading and hard study were necessary; one, in fact, required to be an adept in the art of war. He must remark that the game was not a novelty. On the Continent it had been used for a great number of years. It was invented by a civilian after the peace of 1815, and was subsequently worked out carefully in all its details by his son, a Prussian officer of Artillery. In 1824 Marshal Muffling, the companion and friend of Wellington, spoke of it in the highest terms of praise. Some 29 years ago, a society of officers was formed at Magdeburg for the special object of playing the game, The chief of this society was Von Moltke, who attached great importance to it. To attempt a full explanation of all the

rules would occupy far too long a time, and would, he feared, be wearisome. He would, therefore, only explain the general principles which concerned the game. They were simple enough. During the late war most of them, he supposed, followed the movements of the armies by placing pins on maps to represent the different bodies of troops, and thus got an excellent idea how matters stood each day. The game of war was simply an amplification of this; instead of pins leaden blocks were used, and these blocks were cut to scale so as to suit the maps and show the exact disposition and space occupied by each arm of the service as well as the direction in which they were moving. His Royal Highness then, by the aid of diagrams explained the disposition of the troops used on either side in playing the game, observing that the maps used in the game were drawn on a large scale, so that each small movement could be clearly shown, and every inequality of ground or obstacle taken advantage of, as it would be in actual warfare. The blocks used were red and blue, the two colours representing the opposing forces. The Prince produced one of the maps used in Prussia, on a scale of eight inches to the mile; the Austrian maps were upon the same scale, but English ordnance maps were on a scale of only six inches to the mile. In order, however, to make use of these maps, the War Office were now engaged in getting leaden models of troops, of a size suitable to this scale. He understood, also, that it was intended to issue shortly a set of maps and models to each military district. His Royal Highness pointed out a remarkable peculiarity in the Austrian map, the pieces composing it being turned in any direction one pleased, yet always fitting, and thus enabling the players, while using the same maps, to change the features of the ground. In explaining the principles of the game, the Prince said that two persons were chosen to take charge of the opposing forces, a third acting as umpire. The two players or opponents need not be very learned. All that was required of them was that they should know what the different blocks were, be able to read a map, and have all the knowledge of the principles which governed the marches of troops, their disposition in action, &c., and, lastly, that they should yield implicit obedience to the decision of the umpire. The umpire, on the other hand, should thoroughly understand the theory and practice of the art of war, and know perfectly all the rules of the game, so that he could apply them at once to any case that might occur. Before commencing to play, the umpire issued a "general idea," stating the nature of the operations and the general object which each side is endeavouring to obtain. This should be done a day or two before the game began in order to give officers sufficient time to study the map. As an illustration of this "general idea" his Royal Highness supposed an invading army had landed and established itself at Hythe, and while pushing rapidly on towards London detached a corps to mask Dover and Chatham; the troops in the south-eastern district were concentrating in Dover for a combined attack on flank or rear, so as to cut off the enemy's communication with Hythe. Besides this a "special idea" was given to each commander to guide his own individual moves, for instance, Colonel M'Donald, who had kindly

undertaken to defend Dover, had received the following special idea. The troops in the south-eastern district had had time to concentrate, and numbered about 11,000 men, as detailed. They were to advance from Dover on the 13th of March and take up a position on the high ground in front of Hougham and Alkham, and to throw out their outposts as far as Swingfield, Evendean, and Stanley. During the night of the 13th the General commanding hears from trustworthy reports that a strong force of the enemy is advancing upon Dover by the road leading towards Hawkinge, Evendean, and Swingfield. The General is to take up the strongest defensive position near his outposts, and to hold it until assistance arrives. After describing the laws of the game, his Royal Highness, before closing, mentioned a few instances to show how closely the game, in its application, approached to what would occur during operations carried on in the field. For instance, a report is sent in from outposts that the enemy is advancing. The Commander cannot immediately give his order to the troops because the laws of the game state that the aide-de-camp cannot carry orders more rapidly than at a certain pace. He must, therefore, wait for a certain time before he can remove his pieces. He might make use of signalmen; but the rule is that, unless he has given written orders for the signalmen to be with that corps, time must be allowed for the aide-de-camp to gallop over that distance. Secondly, an officer orders his men to "double," so as to take cover in a wood. The umpire forbids him to "double" more than 200 yards at one move, and never more than three times in eight moves. Should they be attacked immediately after doubling they receive one chance less than is due to their strength, as they are not then supposed to be so efficient. Having said all that time permitted in explanation of the game the Prince recommended the study of it to all who were anxious to improve themselves in a knowledge of the operations of war, and resumed his seat amid loud cheers.

The following remarks are extracted from the "United Service Magazine" for February 1872:—

For the benefit of those who have not seen the game played, the "Kriegs spiel" may be defined as the representation of some definite operation of war on a plan drawn to a large scale, upon which, instead of the troops, certain movable signs representing them are made use of.

The first requisite for playing the game is to have good maps, on a scale of eight inches or more but not less than six inches, to the mile, all the natural features of the ground, the hills and the valleys, the villages and roads being shown to scale on the plan. The steepness of a hill, and consequently its practicability for the ascent of the different arms can be judged of from a look at the map, by those acquainted with the system of *contours* or the lines where horizontal planes at fixed vertical intervals apart cut the surface of the ground. The hills are shewn to "scale of shade" on Muffling's principle.

These maps are cut in squares of about eighteen inches, and are mounted for convenience on cardboard, so that as many as are required to take in the ground which is to be the scene of the operation, can be placed on the table.

The troops are represented by oblong blocks of lead of different dimensions which are printed on the upper surface according to the conventional signs for representing troops. They are constructed to the same scale as the map, so that a battalion in line represented by a block of lead occupies the same extent of front on the map as the real battalion would on actual ground. So with smaller bodies, such as companies, squadrons, down to single outposts, and vedettes, each has a special block of lead to distinguish it. To distinguish the opposed forces one set of blocks is painted red, the other blue. The front or rear, as the case may be, is also shown.

A scale corresponding to the map, a pair of compasses, and a die comprise all the apparatus necessary.

For the carrying out of a small game, that is to say, of a minor operation of war, as the reconnaissance of an enemy's position for instance, three players are necessary. One to conduct the game occupying the position of umpire or referee, the other two to command the contending forces. In a larger game the chief umpire would be assisted by sub-umpires, and the commanders of forces by troop leaders, &c.

The players being assembled, the chief umpire, or instructor gives out the "general idea" (of a similar nature to that given at the Autumn manœuvres,) fixing definitely the position of the troops in the theatre of war with reference to each other, their bases, lines of communication, &c., such information in fact as would be known to the troops in real war. Each commander then retires to his own room to consult his map, and to receive from the umpire the "special idea," (the subject of which is of course unknown to the opposed commander), defining the *object* he has to effect, the force at his disposal, &c., &c. The umpire receives from each in writing the disposition of their forces to effect the *object*, which enables him to calculate where and when by the ordinary rate of march the two forces would sight each other. To avoid long operations out of range of one another, he fixes this time for the commencement of the game.

The following are copies of the "general" and "special ideas" of a game which the writer recently witnessed at one of the upper military schools in Berlin. The officers conducting the operation had served about four years in the army, during which they had taken part in the campaign of 1870-71. It will serve to show the mode of procedure in conducting a game.

#### *General Idea.*

"Situation of affairs as on the day before the battle of Prague 6th May, 1757. The Austrians in position on the right bank of the Moldau.



The King of Prussia had crossed the Moldau and was at Dablitz on the evening of the 5th May; Field-Marshal Count Schwerin at Brandeis.

**SPECIAL IDEA.**

(For Blue Prussian).

"At 6-30, A.M., on 6th May, the King had joined Schwerin at Gbell. The troops are ready to move forward in the direction of Wissoczan, Hloupetin and Keyge.

"A detachment on the left flank (Northern detachment), under Major A. consisting of

1 Battalion Infantry.

1 Company Rifles.

1½ Squadrons.

1 Battery.

receives orders at Sattalitz at 6.45 a.m., on 6th May, to move off and reconnoitre beyond Hostawitz, the enemy's position, which was supposed to be between Keyge and the Ziskaberg."

*Problem.*—Orders for the march of the detachment-commander.

**SPECIAL IDEA.**

(For Red Austrian).

"The Austrian Army will oppose the enemy's attack holding the position between Keyage and the Ziskaberg.

"A detachment on right flank (Southern detachment) under Major B. consisting of

2 Companies Infantry.

1 Company Rifles.

1 Squadron.

4 Guns.

arrives at Hostawitz at 8 p.m., on 5th, with the object of defending the defiles there against any enterprises on the part of the enemy, and of furnishing intelligence about the enemy early on the following morning."

*Problem.*—(1) Written orders for the evening of the 5th. (2) Verbal orders for the next morning.

In compliance with the "special ideas," each commander gave in his written orders. The Austrian commander placed his out-posts on the evening of the 5th, as he would have done in real war, and these retained the same positions on the morning of the 6th. The Prussian commander moved from Sattalitz as ordered. His disposition for the march and the position of Austrian outposts were scrutinised by the umpire with reference to the *object* each commander had in view.

The umpire then decided when the troops were in sight of each other, and therefore what men should be uncovered and placed on the map. The game then commenced. Each commander in turn stated his next move; if he said, "I advance towards the enemy," his troops, which were decided to be in sight of the adversary, were moved on the map over a space equal to that which they would pass over in *two minutes* on actual ground. The *pace* at which they are to move is also stated, and provided it agrees with certain rules laid down on this head, is not interfered with by the umpire; of course, for instance, a commander would not be allowed to *double* his troops for several consecutive moves, without moving them at a walk occasionally. Troops out of sight are likewise advanced, but they may be covered by the hand to conceal the design. The game went on by moves until the outposts met, then the advanced guard supported by the battery became engaged; and ultimately the weaker detachment retired.

The reconnaissance involved the passage of a defile in presence of the enemy; the attack and defence of a village and the use of a wood in protecting the retreat were exemplified and carried out by the players with great intelligence and knowledge of the employment of the three arms.

The umpire then called for opinions from the bystanders, and afterwards criticised the operations himself.

The "moves" are based upon the distance over which troops march in two minutes, which are laid down in the Instructions for the Game as follows;

"*Infantry*.—March along a road 175 yards in two minutes; in engagement, 200 yards; at double, 300 yards, (this can only be done for three out of eight moves, and after each move at double there must follow at least two moves at the ordinary pace,) in thick wood. 80 yards."

"*Artillery*.—15-pounder field battery marches 175 yards; in engagement, 200 yards; in urgent cases 500 yards (two moves out of ten); gallop 700 yards (one out of ten) in two minutes."

"*Cavalry, Horse Artillery*.—March, 175 yards; in engagement, 200 yards; trot and walk, 350 yards; trot, 500 yards (for ten moves, then five moves at engagement pace); gallop, 700 yards (two out of ten); charge, 750 yards in two minutes.

These rates are modified in certain cases, and must be determined by the umpire, as for instance in the case of bad roads, marching by night, or over steep ground. "In tolerably open woods cavalry and infantry can move over 175 yards in two minutes. In thick woods they cannot move at all.

"The establishment of a bridge over a ditch up to twelve feet in breadth occupies four moves; the throwing of a raft or trestle bridge, material being ready, requires fifteen moves for each forty-five yards of bridge, if not ready, five to ten moves more; and for a pontoon bridge ten to fifteen moves for each forty-five yards of length. If the work is done under fire, four or six moves more must be added, and if the fire is heavy and cannot be silenced it is for the umpire to decide if the bridge can be thrown at all.

"The time for conveying an order or for fetching up a commander is two minutes or a 'move' for each 750 yards.

"To send a short order and get an answer by field telegraph also occupies a 'move.'"

By an intelligent use of the above instructions controlled by a good umpire, an operation can be made to approximate to what would actually occur in war. We have not as yet made any mention of how the element of *chance*, which after all affects every operation in the field more or less, is brought to bear in the "Kriegs Spiel."

To take an example, we may wish to attack, and we may have to debouch under an enemy's fire to do so—well the probable success of such an operation will depend on many contingencies, the ground may

be favourable or the reverse, we may be superior in numbers,\* the attack may have been prepared by a powerful artillery fire, or it may be accompanied by a flank attack unseen by the enemy. In the game, the umpire takes all the different points for and against into consideration, the ground, the numbers, the condition of the troops attempting it, &c., &c., and with the assistance of prepared tables, which accompany the Instructions, he decides what faces of the die if turned up in throwing are to indicate success in the operation, and on the other hand what faces are to indicate failure. There are also tables for calculating the the losses of troops under fire. All losses of course have to be removed from the board, and must not be employed again.

Everything depends on having a good umpire who understands not only the leading of troops, but who can also appreciate all the little contingencies which tend to render the operation possible or the reverse. He has also to decide if a body of troops is beaten, or capable of resistance or of attack, and if not at present able, after the lapse of what time they can again be employed.

A good umpire will select ground which may be expected to give instructive situations, and he must be always ready to criticise the position of the engagement. His decision, it is needless to add, must be final.

The advantages of the "Kriegs Spiel" are, (1) that it teaches the habit of reading a map quickly and correctly. It helps to educate the "eye for ground," that most necessary gift for all leaders of troops; (2) it compels the players to be quick in deciding the movements of the troops, and to be exact and precise in giving the necessary orders; (3) it enables the players to gain an insight into the harmonious working of the three arms. It shows them that there can be only general principles not rules, laid down for the disposition of troops and that the disposition for the ever-varying circumstances of each case must be decided on its own merits; (4) it exhibits the relation between time and space better than in any other way, except of course in the field. By showing the exact time it takes to move troops along a road between one point and another, it teaches the player that he must consider how best he can arrange his troops on the march, and also so *time the commencement of the change*, that they may develope into a body fit for attack in any direction at the shortest notice. It demonstrates how a defile such as a single bridge over a river, delays the march of troops, which otherwise might not be appreciated in timing their arrival on the scene of action.

The two points in which the "Kriegs Spiel" is at a disadvantage, are, (1) that the players see more of the ground than they would in reality, for instance, they can see what is going on on the other side of a

---

\* In reckoning numerical circumstances one battalion is reckoned equal to four squadrons, or to half a battery, or to four skirmisher sections.

wood ; and (2) the moral condition of the troops is not taken into account, and on this, as we know, the fate of battles mainly depends.

The latter disadvantage, the more important one, applies to field manœuvres also. Notwithstanding these disadvantages, the "Kriegs Spiel" is undoubtedly a very useful means for illustrating minor operations of war, marches, and preliminary movements before battles, and is, therefore, well adapted for instructing younger officers ; but long and desultory operations in a battle should be avoided, as they tend to weary the interest of the players.

Much depends on the umpire, and the value of his opinions after the game is finished.

There remains to be alluded to, a form of "Kriegs Spiel" recently introduced, and one which has found great favour, especially among the artillery and engineers at Berlin, called "Festungs Kriegs Spiel" in contradistinction to the other form we have been describing, which is called the "Feld." (Field) or Taktik" (Tactics) "Kriegs Spiel."

The "Festung" (fortress) or "Belagerungs" (siege) Game has for its object the illustration of the defence and attack of a fortress.

Similar maps are used as for the other game ; but in addition to the blocks representing troops, there are blocks to represent earthen batteries, obstacles, and all the other paraphernalia of sieges.

More players are required, and they are divided off to the attack and defence.

In this way the siege of a fortress, from the time the enemy's outposts come in sight of it to the time of breaking ground, the formation of the parallels, zigzags of approach, and batteries, can be exemplified.

It will be easily seen how practical this game may be made. For instance, at a certain time it becomes necessary for the player charged with part of the attack on a fortress to throw up a battery. He intimates his intention to do so to the umpire, to whom he must give a written description of the work, with dimensions of the parts, &c., its armament, the working party, its reliefs, the tools, and so on. He must consider the means of transport to bring up this material ; if by rail, he must specify the tonnage, &c., in fact, just as he would have to do in a real siege.

The following significant fact speaks for itself as to the value of this game. A little more than two years ago, the officers at one of the military schools at Berlin studied the attack and defence of the fortress of Metz, of which fortress and its environs they possessed very excellent and detailed maps on a large scale. Within a year, many of those officers formed part of the force which actually invested that fortress, and from their previous study of the ground, they found themselves well acquainted with every hill and road in its vicinity. No better illustration can be given than this of *their practising in peace what they may have to do in war*, and its manifest advantages.

Some enthusiasts in the "Kriegs Spiel" in Prussia, have gone so far as to say that it may take the place of the Autumn Manœuvres, that both are not necessary. A little reflection however will show that this cannot be so. The Autumn Manœuvres give practice to officers and men in the appropriation and utilisation of ground, and in accustoming the eye to measurements; they also give practice to general officers and their staff in the giving and execution of orders; and again to all ranks in the carrying out of evolutions, in rapidly changing from the order of march to the order of battle, and the like; and last, not least, they test the supply and transport Departments.

In the "Kriegs Spiel" we are not tied down in our operations to the actual troops in garrison, nor have we to adopt false movements from consideration for the crops; and again we can represent many varying circumstances of the fight on the same ground.

Each is an useful complement of, but can never be a substitute for the other.

---

Our readers in India will observe that the first requisite for playing this game is to have good maps, on a scale of not less than six inches to the mile. We fear this condition will prove an obstacle to its introduction into this country, since, with the exception probably of the Map of Delhi and its environs, prepared by the Quarter Master General's Department, for the recent manœuvres, and a few plans of cantonments, &c., not a square mile of ground in India, has yet been surveyed on this scale. Our largest General Map of India, the "Indian Atlas," is only on a scale of 4 miles to an inch, and though the Revenue Survey has all the details of the Village Surveys on a scale of four inches to the mile they have never been printed, nor indeed, from the projection adopted, could they be brought together accurately so as to form a large map. We must look to the Quarter Master General's Department to assist us, and we trust this new demand will lead to the production of what has long been a great desideratum, good maps of each Military division and district with special reference to Military Strategy. If General Officers take but sufficient interest in the question, the means will soon be forthcoming; the Assistant Quarter Master General should prepare a skeleton projection on a scale of one inch to a mile, and put in the topographical features by enlargement from the Survey Maps. This scale is the same as the Ordnance Survey Map of England, and we doubt, if many officers at Aldershot last year possessed anything larger, it would answer well enough for the preliminary moves of the game before the hostile parties come in contact, but positions of every kind must be drawn on the full scale of six or eight inches. Here would be ample opportunity for our young Cavalry Officers to exhibit their skill in reconnaissance, and we hope it will be turned to account in filling in these maps, but it is equally a duty of the Infantry Officer, and we trust he will not be left behind in the work. We must not expect much at first in the way of "scales of shade," or place the standard of drawing too high, but we should insist on a certain minimum ratio of error

only. We might take as a type of these sketches of position, the one by General Bainbrigge, given in the Aide Memoire in the article "Field Sketching," though we have often felt that if His Grace *The Duke* really fought the Battle of Salamanca on its authority, his confidence bordered on temerity. However, let us make a beginning and do something to relieve ourselves of the reproach the French Army have incurred in the late war, of knowing less about their own country than their enemies. It may be a melancholy satisfaction that the Prussians have not *yet* surveyed India, though, if all that is said is true, the Topographical department at Berlin must have as large a capacity as the credulity of some of their admirers.

---

## II.

**The Study of Natural History.**

A lecture under this title delivered at the Royal Artillery Institution, Woolwich, by the Rev. Canon Kingsley, has just been published, containing some admirable remarks on the relation between the soldier and the naturalist, from which we cannot forbear making the following extracts.

After some introductory matter, he proceeded :—

“ It seemed to me therefore, that I might, without impertinence, ask you to consider a branch of knowledge which is becoming yearly more and more important in the eyes of well-educated civilians—of which, therefore, the soldier ought at least to know something, in order to put him on a par with the general intelligence of the nation.

“ Let me, however, reassure those who may suppose, from the title of my lecture, that I am only going to recommend them to collect weeds and butterflies, ‘ rats and mice, and such small deer.’ Far from it. The honourable title of Natural History has, and unwisely, been restricted too much of late years to the mere study of plants and animals; but I desire to restore the words to their original and proper meaning—the History of Nature; that is, of all that is born, and grows—in short, of all natural objects.

“ If any one shall say, by that definition you make not only geology and chemistry branches of natural history, but meteorology and astronomy likewise—I cannot deny it; they deal, each of them, with realms of Nature. Geology is, literally, the natural history of soils and lands; chemistry the natural history of compounds, organic and inorganic; meteorology the natural history of climates; astronomy the natural history of planetary and solar bodies. And more, you cannot now study deeply any branch of what is popularly called Natural History—that is, plants and animals—without finding it necessary to learn something, and more and more as you go deeper, of those very sciences. As the marvellous interdependence of all natural objects and forces unfolds itself more and more, so the once separate sciences, which treated of different classes of natural objects, are forced to interpenetrate, as it were, and supplement themselves by knowledge borrowed from each other. Thus—to give a single instance—no man can now be a first-rate botanist unless he be also no mean meteorologist, no mean geologist, and—as Mr. Darwin has shown in his extraordinary discoveries about the fertilisation of plants by insects—no mean entomologist likewise.

“ It is difficult, therefore, and indeed somewhat unwise and unfair, to put any limit to the term Natural History, save that it shall deal only with

nature and with matter, and shall not pretend—as some would have it to do just now—to go out of its own sphere to meddle with moral and spiritual matters. But, for practical purposes we may define the natural history of any given spot as the history of the causes which have made it what it is, and filled it with the natural objects which it holds. And if any one would know how to study the natural history of a place, and how to write it, let him read—and if he has read its delightful pages in youth, read once again—that hitherto unrivalled little monograph, White's 'History of Selborne;' and let him then try, by the light of improved science, to do for any district where he may be stationed what White did for Selborne nearly 100 years ago. Let him study its plants, its animals, its soils and rocks, and last, but not least, its scenery, as the total outcome of what the soils, and plants, and animals have made it. I say, have made it. How far the nature of the soils and the rocks will affect the scenery of a district may be well learnt from a very clever and interesting little book of Prof. Geikie's on 'The Scenery of Scotland, as affected by its Geological Structure.' How far the plants and trees affect not merely the general beauty, the richness or barrenness of a country, but also its very shape; the rate at which hills are destroyed and washed into the low land; the rate at which the seaboard is being removed by the action of waves—all these are branches of study which is becoming more and more important.

“ And even in the study of animals and their effects on the vegetation, questions of really deep interest will arise. You will find that certain plants and trees cannot thrive in a district, while others can, because the former are browsed down by cattle, or their seeds eaten by birds, and the latter are not; that certain seeds are carried in the coats of animals, or wafted abroad by winds—others are not; certain trees destroyed wholesale by insects, while others are not; that in a hundred ways the animal and vegetable life of a district act and react upon each other, and that the climate, the average temperature, the maximum and minimum temperatures, the rainfall, act on them, and in the case of the vegetation, are reacted on again by them. The diminution of rainfall by the destruction of forests, its increase by re-planting them, and the effect of both on the healthiness or unhealthiness of a place—as in the case of the Mauritius, where a once healthy island has become pestilential, seemingly from the clearing away of the vegetation on the banks of streams—all this, though to study it deeply requires a fair knowledge of meteorology, and even a science or two more, is surely well worth the attention of any educated man who is put in charge of the health and lives of human beings.

“ You will surely agree with me that the habit of mind required for such a study as this, is the very same as is required for successful military study. In fact, I should say that the same intellect which would develop into a great military man, would develop also into a great naturalist. I say, intellect. The military man would require—what the naturalist would not—over and above his intellect, a special force of will, in



order to translate his theories into fact, and make his campaigns in the field and not merely on paper. But I am speaking only of the habit of mind required for study ; of that inductive habit of mind which works, steadily and by rule, from the known to the unknown—that habit of mind of which it has been said :—‘ The habit of seeing ; the habit of knowing what we see ; the habit of discerning differences and likenesses ; the habit of classifying accordingly ; the habit of searching for hypotheses which shall connect and explain those classified facts ; the habit of verifying these hypotheses by applying them to fresh facts ; the habit of throwing them away bravely if they will not fit ; the habit of general patience, diligence, accuracy, reverence for facts for their own sake, and love of truth for its own sake ; in one word, the habit of reverent and implicit obedience to the laws of Nature, whatever they may be—these are not merely intellectual, but also moral habits, which will stand men in practical good stead in every affair of life, and in every question, even the most awful, which may come before us as rational and social beings.’ And specially valuable are they, surely, to the military man, the very essence of whose study, to be successful, lies first in continuous and accurate observation, and then in calm and judicious arrangement.

“ Therefore it is that I hold, and hold strongly, that the study of physical science, far from interfering with an officer’s studies, much less unfitting for them, must assist him in them, by keeping his mind always in the very attitude and the very temper which they require.

“ I should like to see the study of physical science an integral part of the curriculum of every military school. I would train the mind of the lad who was to become hereafter an officer in the army—and in the navy likewise—by accustoming him to careful observation of, and sound thought about, the face of nature—of the commonest objects under his feet, just as much as of the stars above his head ; provided always that he learnt, not at second-hand from books, but where alone he can really learn either war or nature—in the field, by actual observation, actual experiment. A laboratory for chemical experiments is a good thing, it is true, as far it goes ; but I should prefer to the laboratory a naturalist’s field club, such as are prospering now at several of the best public schools, certain that the boys would get more of sound inductive habits of mind, as well as more health, manliness, and cheerfulness, amid scenes to remember which will be a joy for ever, than they ever can by bending over retorts and crucibles, amid smells even to remember which is a pain for ever.

“ But I would, whether a field club existed or not, require of every young man entering the army or navy—indeed, of every young man entering any liberal profession whatsoever—a fair knowledge, such as would enable him to pass an examination, in what the Germans call *Erd-kunde* (earth-lore)—in that knowledge of the face of the earth and of its products for which we English have as yet cared so little that we

have actually no English name for it, save the clumsy and questionable one of physical geography, and, I am sorry to say, hardly any readable school books about it, save Keith Johnston's 'Physical Atlas'—an acquaintance with which last I should certainly require of young men.

"It does seem most strange—or rather will seem most strange 100 years hence—that we, the nation of colonies, the nation of sailors, the nation of foreign commerce, the nation of foreign military stations, the nation of travellers for travelling sake, the nation of which one man here and another there (as Schleiden sets forth in his book, 'The Plant,' in a charming ideal conversation at the Travellers' Club) has seen and enjoyed more of the wonders and beauties of this planet than the men of any nation, not even excepting the Germans—that this nation, I say, should as yet have done nothing, or all but nothing, to teach in her schools a knowledge of that planet, of which she needs to know more, and can if she will know more, than any other nation upon it.

"Thus much I can say just now—and there is much more to be said—on the practical uses of natural history. But let me remind you, on the other side, if natural history will help you, you in return can help her; and would, I doubt not, help her, and help scientific men at home, if once you look fairly and steadily at the immense importance of natural history—of the knowledge of the 'face of the earth.' I believe that all will one day feel, more or less, that to know the earth on which we live, and the laws of it by which we live, is a sacred duty to ourselves, to our children after us, and to all whom we may have to command and to influence; ay, and a duty to God likewise. For is it not an act of common reverence and faith towards Him, if He has put us into a beautiful and wonderful place, and given us faculties by which we can see, and enjoy, and use that place—is it not a duty of reverence and faith towards Him to use those faculties, and to learn the lessons which He has laid open for us? If you feel that, as I say you all will some day feel, you will surely feel likewise that it will be a good deed—I do not say a necessary duty, but still a good deed and praiseworthy—to help physical science forward, and add your contributions, however small, to our general knowledge of the earth. And how much may be done for science by British officers, especially on foreign stations, I need not point out. I know that much has been done, chivalrously and well, by officers, and that men of science own them, and give them hearty thanks for their labours; but I should like, I confess, to see more done still. I should like to see every foreign station, what one or two highly-educated officers might easily make it—an advanced post of physical science, in regular communication with our scientific societies at home, sending to them accurate and methodic details of the natural history of each district—details <sup>so</sup> of which might seem worthless in the eyes of the public, but which would all be precious in the eyes of scientific men, who know that no fact is really unimportant, and more, that while plodding patiently through seemingly unimportant facts, you may stumble on one of infinite importance, both scientific and practical.

" There are those, lastly, who have neither time nor taste for the technicalities, the nice distinctions, of formal natural history ; who enjoy Nature, but as artists or as sportsmen, and not as men of science. Let them follow their bent freely ; but let them not suppose that in following it they can do nothing towards enlarging our knowledge of Nature, especially when on foreign stations. So far from it, drawings ought always to be valuable, whether of plants, animals, or scenery, provided only they are accurate ; and the more spirited and full of genius they are, the more accurate they are certain to be ; for Nature being alive, a lifeless copy of her is necessarily an untrue copy. Most thankful to any officer for a mere sight of sketches will be the closet botanist, who, to his own sorrow, knows three-fourths of his plants only from dried specimens ; or the closet zoologist, who knows his animals from skins and bones. And if any one answers, ' But I cannot draw,' I rejoin, you can at least photograph. If a young officer, going out to foreign parts, and knowing nothing at all about physical science, did me the honour to ask me what he could do for science I should tell him, learn to photograph ; take photographs of every strange bit of rock formation which strikes your fancy, and of every widely extended view which may give a notion of the general lie of the country. Append, if you can, a note or two, saying whether a plain is rich or barren ; whether the rock is sandstone, limestone, granitic, metamorphic, or volcanic lava ; and if there be more rocks than one, which of them lies on the other ; and send them to be exhibited at a meeting of the Geological Society. I doubt not that the learned gentlemen there will find in your photographs a valuable hint or two, for which they will be much obliged. I learnt, for instance, what seemed to me most valuable geological lessons from mere glances at drawings—I believe from photographs—of the Abyssinian ranges about Magdala.

" Or again, let a man, if he knows nothing of botany, not trouble himself with collecting and drying specimens ; let him simply photograph every strange tree or new plant he sees, to give a general notion of its species, its look ; let him append, where he can, a photograph of its leafage, flower, fruit and send them to Dr. Hooker, or any distinguished botanist, and he will find that, though he may know nothing of botany, he will have pretty certainly increased the knowledge of those who do know.

" The sportsman, again—I mean the sportsman of that type which seems peculiar to these islands, who loves toil and danger for their own sakes ; he surely is a naturalist, *ipso facto*, though he knows it not. He has those very habits of keen observation on which all sound knowledge of nature is based ; and he, if he will—as he may do without interfering with his sport—can study the habits of the animals among whom he spends wholesome and exciting days. . . .

" The two classes which will have an increasing, it may be a preponderating, influence on the fate of the human race for some time, will

be the pupils of Aristotle and those of Alexander—the men of science and the soldiers. They, and they alone will be left to rule; because they alone, each in his own sphere, have learnt to obey. It is therefore most needful for the welfare of society that they should pull with, and not against, each other; that they should understand each other, respect each other, take counsel with each other, supplement each other's defects, bring out each other's higher tendencies, counteract each other's lower ones. The scientific man has something to learn of you gentlemen, which I doubt not that he will learn in good time. You, again, have (as I have been hinting to you to-night) something to learn of him, which you, I doubt not will learn in good time likewise. Repeat, each of you according to his powers, the old friendship between Aristotle and Alexander; and so, from the sympathy and co-operation of you two, a class of thinkers and actors may yet arise which can save this nation, and the other civilized nations of the world, from that of which I had rather not speak, and wish that I did not think, too often and too earnestly.

“I may be a dreamer; and I may consider in my turn, as wilder dreamers than myself, certain persons who fancy that their only business in life is to make money, the scientific man's only business to show them how to make money, and the soldier's only business to guard their money for them. Be that as it may, the finest type of civilized man which we are likely to see for some generations to come, will be produced by a combination of the truly military with the truly scientific man. I say, I may be a dreamer; but you at least as well as my scientific friends, will bear with me; for my dream is to your honour.”

“*Nature*,” *Mar. 21st.*

## III.

**The Wellington Despatches.\***

THIS volume of the Wellington Papers refers to the events of the Peninsular War from 1811 to 1814, and has been rightly designated an Appendix. It contains little worthy of note from the pen of the Great Duke himself during the memorable period it comprises, the Editors of the Gurwood series and of the Supplementary Despatches having almost exhausted these documents; but it abounds in papers of a different kind, which should be included in every collection of the authentic records of Wellington's exploits. The peculiar characteristic of this volume is that it includes a mass of the correspondence of Napoleon, Joseph, and the French Marshals in Spain, from Fuentes d'Onoro to Toulouse, which enables us, so to speak, to see the contest from our adversary's side, and which deserves to be carefully studied by any one who would really understand the authentic military history of the time. These documents, which, with no disparagement to a brave nation, we may fairly say are marked by a singularly French style, and of which many hitherto have been unpublished, not only bring out in striking relief the extraordinary ability displayed by Wellington during the arduous struggle which at last carried him in triumph from the Tagus to the Garonne, but also throw a vivid light on the real causes which weakened and destroyed the power of Napoleon in the Peninsula, and which exposed his formidable armies to defeat by a force almost to the last decidedly inferior in numeral strength. They show with what secrecy and rapidity the Duke matured his preparations for the brilliant campaign of 1812, when as yet he confronted, almost unaided, the gigantic hosts of the French Empire, and with what energy he pressed on to victory when the retreat from Moscow and the uprising of Germany had shaken to its base that imposing fabric; and they prove clearly how ruinous was Napoleon's system of making war on a theatre naturally unfitted for it; how fatal were the results of his orders directed in ignorance of facts from a distance; how the dissensions, and jealousies of his lieutenants more than once led to ignominious failures; and how genius of the very highest order was baffled and thwarted when it endeavoured to contend against the nature of things, and when it trusted to unsuitable instruments. This volume also contains papers not without interest on the great events which precipitated the fall of Napoleon, and on the negotiations of 1814; and several letters of Soult in it bear the highest testimony to the military skill and loyalty of that able commander. A few, too, of Wellington's despatches are characteristic and deserve notice, though, as we have said, they do not form the most important part of the present collection.

---

\* *The Wellington Despatches.* Supplementary Despatches, Correspondence, and Memoranda of Field-Marshal Arthur, Duke of Wellington, K.G. Edited by his son, the Duke of Wellington, K.G. Vol. 14. Appendix. 1812-1814. London, 1872.

This volume opens at the beginning of the momentous era 1812. At that time, though the invasion of Portugal by Masséna had completely failed, five-sixths of the Peninsula, at least, was held in the iron grasp of Napoleon, and it seemed scarcely possible that the feeble force which had baffled his eagles at Torres Vedras could much longer resist his efforts. The east of Spain had been subdued by Suchet, Joseph seemed for the time secure on the throne; Soult and Victor, established in Andalusia, were advancing to Cadiz and Tarifa, and Marmont, in command of Masséna's army, and with powerful reserves at hand, held Leon with the northern provinces and the great line of communications to France. These enormous armies, which numbered at least 350,000 excellent soldiers, were confronted only by Wellington's force, not more, certainly, than 60,000 strong, and by the Spanish guerillas and levies, and this being so we cannot wonder that Europe believed the contest hopeless. Yet, though we do not affect to doubt that had Napoleon made proper use of his prodigious military resources, he could have compelled the Duke to re-embark, there were circumstances in the conditions of the struggle which made it not so utterly unequal as it appeared even to experienced eyes; and it is because Wellington perceived these, and never swerved from his hopeful convictions, that his capacity and wisdom were so pre-eminent. His position in Portugal was extremely strong; he had the immense advantage of the command of the sea, his army, concentrated and well supplied, was directed solely by his orders, and was powerfully aided by the insurrection which consumed the invaders wherever they spread; and all this gave great general opportunities occasionally to strike boldly and even to gain important success. The French armies, on the other hand, were dangerously exposed along the whole line of their communications from Bayonne to the south, which absorbed a considerable part of their force; they were unduly broken up through the orders of a master who underrated their foe; they were under generals with separate commands, and who were often jealous of each other; they were guided in their main operations by the Emperor's directions given from Paris; they were not seldom so ill-provided that their movements were stopped or paralyzed; in a difficult and intricate country they were assailed by the efforts of a whole nation, which wasted them and gave them no repose; and the result was they were not able to put forth their real military strength; their numbers were usually of no avail; and they were frequently liable to defeat by a daring, skilful, and wary adversary. The consequences of this state of things were seen from the first in 1812, even before Napoleon had despatched a man from the Peninsula to the Russian frontier. Wellington, who had secretly prepared his siege train, and had brought it by water carriage from Lisbon, broke up suddenly from his cantonments and took the great fortress of Ciudad Rodrigo—the avenue to the heart of Spain—almost under the eyes of Marmont, whose army, weakened by large detachments and widely scattered in order to subsist, was not able to arrest the victor. How little the Marshal expected this affront, and how surprised he was at the issue, we see from the following curious letters. He wrote thus to Napoleon on the 16th of January:—

"I am marching as quickly as I can to the relief of Ciudad Rodrigo. The four divisions I had concentrated were not sufficient, so I have been obliged to call up two divisions of the Army of the North and the division of General Bonet from the Asturias. I shall thus have 60,000 men, with whom I shall attack the enemy. You may expect soon to hear that the French army has done some glorious exploit."

The fortress had fallen on the 19th, long before Marmont had reached Wellington. The Marshal wrote ruefully on the 24th :—

"On the 19th, Ciudad Rodrigo was captured by assault. In all this there is something so incomprehensible that I do not think it right as yet to hazard a remark."

No sooner had Ciudad Rodrigo fallen than Wellington began to direct his efforts against Badajoz, the second fortress which covered the approaches of the Spanish frontier. The operations which ensued deserve the attention of the Military student, for they illustrate the ability of the Duke, and prove how disastrous were the effects of Napoleon's orders despatched from Paris, and how his peculiar strategic system failed in a theatre like the Peninsula. As Wellington, skilfully availing himself of the advantage of his central position, was preparing to march into Alentejo, Marmont, stationed on an exterior line in Leon, entreated Napoleon to allow him to make a corresponding movement to the south, and to co-operate with a part of the army of Soult from Andalusia to protect Badajoz. This enterprise, though not without danger, for it would expose the line of the French communications, which Napoleon knew was his weak point, would in all probability have saved the fortress; and, had Marmont and Soult united they might possibly have found the opportunity which they had let slip the preceding year, to strike an effective blow at the British commander. But Napoleon, ignorant of the means which Wellington had by this time in his hands, convinced that he would not venture to move into Estremadura, far from his base, and unaware of the impediments which almost doomed to immobility the French armies, had devised a scheme which, in his judgment, would alike keep Marmont in his true place, covering the communications of the French with Bayonne, and would secure Badajoz from serious peril. If Wellington, he said, invaded Estremadura, Marmont was to enter the north of Portugal, and this expedition, which would menace Lisbon and the communications of the English with the sea, would retain Marmont in his proper sphere and compel Wellington to a speedy retreat. His reiterated instructions were precise :—

"Place your army so that in four marches it can concentrate at Salamanca. . . . Maintain an irregular warfare with the enemy's outposts. You will thus command all the operations of the English. If Lord Wellington marches on Badajoz allow him to go there; collect your army and move on Almeida; push forward light parties on Coimbra, and rest assured that Lord Wellington will soon return. The English are too knowing to make such mistakes. . . . Do not think of going southward, but march straight into Portugal if Lord Wellington foolishly ventures to the left bank of the Tagus."

Like all Napoleon's strategic combinations, this plan was founded on sound theory : but as it rested on a misconception of the facts, it was destined to end in calamitous failure. In the first place, the Duke was much stronger than the French Emperor chose to believe, and could afford to disregard a mere demonstration against the north of Portugal ; and, in the next place, what was more important, the army of Marmont was not able to march into Beira in any real force, the country being utterly exhausted, and magazines not being forthcoming. We see here one of the chief reasons of the discomfiture of Napoleon in Spain ; his system of rapid and daring movements, without previously collecting supplies, was baffled when the territories he intended to invade were not capable of supporting his troops. Marmont, upon the spot, remonstrated in vain ; and though it would be idle to compare his military talents with those of his master, he certainly recommended the more judicious course, so great is the difference between schemes based on speculation and on knowledge of the facts. Marmont's letters are interesting and significant :—

“ Your Highness (Berthier) writes that if my army were concentrated at Salamanca, the English would not be so foolish as to move into Estremadura, leaving me in their rear, and with the power of going to Lisbon. . . . The Emperor, it would seem, reckons without considering our means of subsistence ; this is an insuperable difficulty ; if magazines had been provided the Emperor's orders might be feasible, but they are not so now. In the existing state of our affairs my army could not pass the Coa in force, and Wellington's detachments are quite strong enough to baffle any attack I could make on Portugal. No movement in that direction could save Badajoz. . . . We are not on equal terms in our present war with the English. The English army is always ready for action, for it is well provided and has abundant means of transport. We have no magazines that will give us food for five days, and no means of transport whatever.”

The result is sufficiently known to students of the Peninsular war. The Duke did not allow himself to be terrified by the petty demonstrations which Marmont, compelled to obey Napoleon, made against his communications in Portugal ; and having rapidly collected his army, he pounced upon and captured Badajoz before Soult could relieve the fortress. A French general officer observed :—

“ Every calculation turned out false. The army of Marmont moved away from ours when it ought to have been moving towards it. Wellington, with the combined English and Portuguese forces, has taken the fortress under the eyes of two French armies, 80,000 strong.”

These splendid achievements threw open the Spanish frontier to the British Commander, and prepared the way for greater success. The result was due to the striking ability with which Wellington made use of his small force in a central position, and to the difficulties and misdirection of the French armies ; and it should be remembered that Ciudad Rodrigo and Badajoz fell before Napoleon had weakened his forces in the Peninsula. The French Emperor, of course, denounced his Mar-



shals as incapable and timid ; but he really had only himself to blame for making dispositions in ignorance of the facts ; and, in truth, when viewed in the light of the events his schemes, great commander as he was, seem almost as idle as the designs of the pedants of the old Aulic Council, which he was wont to turn into ridicule. Such will ever be strategy resting on hypothesis and deficient knowledge ; but this Napoleon would not admit, and he wrote indignantly as he was setting off to Russia :—

“ The Emperor orders you to take means to prevent 40,000 English soldiers from ruining his affairs in Spain, which will certainly take place if the commanders of his armies are not animated by zeal and patriotism. On his return from Poland His Majesty will go to Spain in person.”

We shall not dwell on the brilliant events of the Spanish campaign of 1812. Our readers know how, when the French armies had been diminished by draughts for Russia, the Duke boldly invaded Spain ; how Marmont opposed him on the Douro ; how the Marshal recklessly moved against him without waiting for the reinforcements which ought to have assured success, and how after a long game of *mæuvres*, Marmont was suddenly and brilliantly overthrown in the battle which, in a special manner, proves Wellington's talents as a tactician. We shall not comment on Salamanca—the Austerlitz of the Peninsular War—but we quote a few lines from a report by Marmont, characteristic of the Napoleonic bulletins—

“ The troops performed prodigies of valour, but were compelled to retreat. . . . Our loss is estimated at about 5,000 men. That of the English is much greater—the ravages done by our artillery were incalculable.”

The defeat of Salamanca, due mainly to the vanity and ambition of Marmont, disturbed the whole conquests of the French in Spain, and struck a fatal blow at their ill-gotten power. Joseph was compelled to evacuate Madrid ; Andalusia and the south were finally lost ; and though possibly had the bold advice of Soult been followed the war even yet might have taken a different turn, and though Wellington was obliged to retreat not without disaster at the close of the year, the Peninsula was thenceforward to be no longer the scene of French triumphs. Suchet, indeed, still firmly held the east ; but everywhere else the French occupation was restricted within diminishing limits, and the French armies, surrounded by national insurrection on every side, and often wretchedly equipped and supplied, was shorn of much of their military strength. Dissensions were the natural result, and the volume abounds in curious recriminations between Joseph, who accused Soult of cowardice during the retreat from Burgos and of openly aspiring to the Crown of Spain, and Soult who, very justly we think, charged Joseph and his colleagues with incapacity. As might have been expected, the complainants referred their disputes to their Imperial master, though thousands of miles away in Russia, a striking proof of the abject submission to one dominant will which was the chief feature of Napoleon's purely autocratic govern-

ment. The Emperor's remarks to one of Joseph's aide-de-camps at Moscow are very characteristic of the man :—

"The King and Marshal Soult had made a mistake, but he could not trouble himself about those wretched squabbles when he was at the head of 500,000 men, and was undertaking gigantic operations." . . . He added that the Duke of Dalmatia had the only military head in Spain. 1

Before long the instrument of Napoleon's power, the Grand Army with its allied contingents, had perished in the awful catastrophe. The writer from whom we have just quoted saw a great deal of the celebrated retreat; and it will be observed that he ascribed the ruin of the French army to the true cause—the want of food and supplies in a country unable to support such a host, a striking instance of the capital vice in Napoleon's system of war of invasion. He says :—

"The army when I left was in a frightful condition. For a long time its disorganisation and losses had been terrible; the artillery and cavalry had ceased to exist. All the regiments were confused masses; the soldiers marched pellmell, thinking only how to procure food, every day thousands of men fell into the hands of the Cossacks. Vast as was the number of the prisoners, that of the dead was still greater. It is impossible to describe how horrible were the results for the want of food, for more than a month no rations had been served out, dead horses were the only resource, and the Marshals were often without bread."

The year 1813 saw the beginning of the fall of Napoleon. While in Saxony he fiercely struggled against the hosts of the Coalition, and held the balance of Fortune in suspense by his genius and the terror of his name, his power in Spain though still formidable, collapsed quickly, and was reduced to nothingness. The Duke, at last, at the head of a force not wholly unequal to his foes, set forth from his lair in the north of Portugal, and advancing rapidly, drove before him the French armies, which vainly endeavoured to guard their communications with Bayonne, and were being surely outflanked by their enemy. Then was fully seen the extraordinary advantage to a great General of the command of the sea in the actual circumstances of the Peninsula. Wellington, transferring his base to the north of Spain, from the rocks of Lisbon, compelled his adversaries precipitately to retreat, and to fight in a disastrous position. It is unnecessary to comment on the great day of Vittoria, or on the expulsion of the invaders from Spain; but it should be remarked that had Suchet, who was still unmolested in the east, co-operated in good faith with Joseph, the retreat of the French might have been secured, or even turned to their advantage, for their combined armies were still largely superior in numbers to their opponents. But Suchet, whether from distrust or jealousy, or in obedience to Napoleon's orders, refused to fall back upon the Ebro to the aid of his hard-pressed colleagues, and Joseph was literally hurled out of Spain, though nominally at the head of forces more powerful than those commanded by Wellington. We quote from one of Joseph's imploring letters to Suchet :—

"The enemy is about to cross the Carrion in greatly superior force.

I hope to be rejoined in the plains of Burgos by the infantry of the Army of Portugal, to attack the enemy and drive him across the Douro. I trust you have received instructions suitable to our actual situation. So far as I can give an opinion, I think you should so conduct yourself as not to remain isolated in the Peninsula."

The volume contains many interesting details about the long and well-sustained contest between Soult and the Duke on the French frontier, and the operations which at last brought the British army in triumph to the Garonne. The story, however, is well known, and we need not repeat how the Duke of Dalmatia in vain attempted to roll back the tide of invasion behind the Pyrenees; how, when baffled, he made a gallant stand, but was gradually driven from the formidable positions to which he retreated time after time; how he appealed fruitlessly to the honour of Suchet to assist him in the unequal encounter, but was left isolated by his brother Marshal; how the Nive, the Nivelle, the Adour, and Orthes were illustrated by British exploits and triumphs; and how at last the Duke, having fought his way in a course of unchecked victory to Toulouse, closed the war at the head of the noble host which had become in his master hand the most perfect of military instruments. The most striking features in the contest, perhaps, were that Soult and Suchet, if they had combined, would have been still superior in force to Wellington, but could never be brought to act in concert; that the diversion made by the Duke in France contributed at least as much to the issue as all the efforts of the Coalition repeatedly overthrown by Napoleon; and that one of the causes of our success in France was the admirable discipline maintained in our army, in contrast with the excesses and rapacity of the French, which exasperated even their own countrymen. Imperialism, indeed, in the hour of trial though still illustrated by the most brilliant genius, showed badly and collapsed rapidly; and between the dissensions of his lieutenants and political errors committed by himself, the miserable condition of his ill-supplied armies, and the apathy and despair of France, Napoleon's fall was not long delayed. Soult gives the following painful description of the brave army under his command:—

"It is with regret I have to report to your Excellency that the number of deserters to the enemy is greatly on the increase. The offers made by the English, and the privations and hardships suffered by my troops, are the causes of this neglect of their duty. All the administrative services of the army are in a bad state, and the complete want of money causes many complaints."

Soult's conduct at this terrible conjuncture was creditable to him in the highest degree; he was one of the few of Napoleon's lieutenants who remained faithful to their master to the last. Nor were his military talents less conspicuous; he not only played a long losing game against Wellington with consummate skill, but devised a scheme of defensive operations for the whole of France which, if less brilliant than Napoleon's daring and grand conceptions, was more prudent and according to rule. It must not be forgotten that if the strategy of Napoleon

in 1814 was wonderful, it risked everything for the entire Empire, and, considered as a whole, it was too ambitious and over bold to have had a good chance of success. Soult's scheme was to collect the remains of the French armies to defend Paris, leaving merely detachments on the frontier; and it is difficult to predict what the result might have been had Napoleon, aided by these reinforcements, won a decisive battle over Blucher and Schwarzenberg. The Marshal wrote thus to Clarke :—

“ I wish you to propose to the Emperor to form as large an army as possible before Paris by drawing together all the disposable forces of the Empire, and to create as many partisans as we can to defend all other points which have been invaded or are threatened. . . . Shall France, fair France, perish after having ruled the world ? ”

In striking contrast to Soult's fidelity was the perfidy of the frivolous Murat. We quote from a characteristic letter of Napoleon to him :—

“ You are a good soldier on the field of battle, but everywhere else you have neither energy nor courage. You can hardly be of those who think that the lion is dead, and that you can insult him ? If these are your calculations you will find yourself mistaken.”

This volume contains an interesting account of Soult's operations around Toulouse. It is clear the Marshal laid no claim to having won that bloody battle; he admitted that he was compelled to retreat after the heights of Mont Rave had been seized. He thus describes the failure of the flank attack of Taupin, which probably would have succeeded had not the British army acquired a decisive ascendancy by repeated victories :—

“ These dispositions promised the happiest results ; 7,000 or 8,000 English and Portuguese ought to have been destroyed or taken prisoners if the 4th Division had attacked as I had a right to expect ; but its ardour died away, it swerved, halted, and gave the enemy time to form and assail it.”

The following letter from Lord Bathurst shows the real purpose of the British plenipotentiaries even at Châtillon at the last moment. But for his obstinacy and extravagant pretensions, Napoleon might have retained the throne, and Waterloo and St. Helena have never been scenes in the eventful drama of history :—

“ There is so strong an impression at Châtillon of the indifference of the French to the House of Bourbon that I see no prospect of being able to break off the negotiation on that ground if Bonaparte be willing to subscribe to the project.”

**Review.**

WE have to acknowledge, with thanks, the receipt of the Abstract of Proceedings of the Sanitary Commissioner with the Government of India, for the half year ending December 1871. These reports embrace so wide a range and minute a detail of subjects that the mere enumeration of them would absorb more space than we could well spare, but we regret that they are not more widely circulated as a proof of the amount of care, foresight, skill and science, expended on the sanitary administration of the Army in India. We should like to see these reports on the tables, both of the Officers' Library and the Soldiers' Reading-room, and we venture to say they would do more for their practical education than nine-tenths of the works now to be found there.

The Officer would see at a glance the condensed results of the interminable Committees which it has been his duty to attend in which his interest extended no farther than what was necessary to prevent his signing his name in the wrong place, while the soldier would learn that the "Departments" are not necessarily antagonistic to his regimental authorities, that even Barrack Masters and Executive Engineers and Assistant Quarter Masters General have sympathies for him, and that there is no question or suggestion regarding his health and comfort, however trifling, that is not made the subject of earnest discussion and enquiry. We might point to the correspondence on "Barracks at Julundur" in proof of this, and we quote the following to point out to our own readers a wide field of usefulness.

"16. His Excellency the Commander-in-Chief has also remarked with reference to the alleged discomfort in the lower floors of the barracks that these rooms have been left entirely unfurnished, whereas, if a little furniture and a few accessories to comfort, maps, pictures, &c., were provided, they might be made very attractive places to which quiet men might resort escaping from the general barrack room without exposing themselves to the sun, or having to quit their barracks, a question which should be referred for the consideration of the Military Department."

"It has constantly been a subject of regret that soldiers should pass so much of their time in their beds, admitting that they require beds as a resource, and that under present circumstances, as their kits and boxes, in fact, all their possessions are there, their dormitory must also of necessity be a place of daily resort, yet it is desirable under the view of improving the soldier's general character and habits that he should have some place to go to in the day time, and not be compelled to be bedridden all day for want of such, without going out in the sun in the hot weather, which he must do to get to the General Library, Recreation Room or Workshops. These institutions are most valuable, but the library cannot contain more than a fraction of the regiment, and only a comparatively small number of the men are craftsmen capable of employing themselves at trades. There remains therefore the remainder of the men to be benefited by having the day room to resort to, where

something more of quiet may be obtained than in the common ward, where they might have readings or company lectures during the hot weather."

"The want of day rooms has often been lamented by regimental officers of liberal minds who really take an interest in the moral improvement of their men. A moderate allowance of furniture would suffice to make these rooms such as would attract the men, and when once established, it would be a matter of pride with many regiments to have them ornamented with a few pictures, &c., such as at present are generally found in all well regulated Sergeant's Messes. In one battery of artillery, which His Excellency distinguished among many in which the officers took pains to improve their men, the officers devoted themselves in turn to give their men instruction on military subjects, history, &c., without some such place belonging to the company or battery this could not be done."

We are glad to observe that the subject of a Cholera Map of India has been discussed in these reports, but there are other difficulties besides that of scale only. Such a map should not be a mere skeleton but a physical map, exhibiting the altitudes, the drainage basins, and the geology of the soil, for all these enter more or less into researches on the origin of cholera.

---

## Gleanings.

THE number of "Engineering" for March 22nd has a description and diagram of a Wood-working Machine, constructed for the Royal Engineers by Messrs. Allen Ransome and Company, and expressly designed by them to perform all the operations of tenoning, morticing, boring, &c., required in converting timber into frames and cases for military mining. Separate machines for these purposes have been long known and appreciated in the building trade, but this is the first time they have been combined in a single machine, and it is an important step not only in mechanical progress, but in the development of a higher organization of the "Royal Engineers" as a corps, to which they have long been slowly advancing, and to which we trust they will now speedily attain; since it would appear that steps are being taken to put them in the matter of tools and implements, on an equal footing with the other branches of the service. It is nearly four years since we saw at the Smithfield Cattle Show a small self-moving portable steam engine of the agricultural type stated to have been constructed by Messrs. Aveling and Porter for the Royal Engineers, and it is difficult to believe that although even then these portable engines were being produced and disposed of at an average rate of 10,00 per annum, the Royal Engineers, who of all engineers ought to be most familiar with machines for saving time and labour were still provided only with hand tools, and performed all the operations of sawing, planing, morticing, rivetting, punching, shearing, grinding, pumping, blowing, hoisting, &c., in precisely the same primitive modes that were used by the corps more than 100 years before steam was thought of as a motive power, in fact, by the simple sweat of their brows.

We ridicule the old Scotch woman who thought it impious to thwart the will of Divine Providence by raising wind with a new-fangled machine instead of waiting patiently for whatever dispensation of wind Providence might be pleased to send on the "sheeling hill," but practically we are following her example very closely, and if a British Army took the field to-morrow, we should still resort to the same old method of cutting up timber for the sleepers, barks and chesses of our battery and bridge platforms by pit-saws, the same primitive hand-bellows for ventilating our galleries and mines, and the same hand-pumps for our water supply and drainage.

It is true we made a slight advance in the Crimea, and more recently in Abyssinia by laying down a few miles of railway from the sea shore, inland; but in the first case it was accomplished by a special civil corps—the army works; and in the second it tried our organization so severely that we could not take it up again, and we left it there. No attempt as yet seems to have been made by the Royal Engineers to introduce any organized system of railway or road-making, for the former is only a modification of the other, and when the road is once made, the laying of rails on it is a very simple matter as was instanced on the Pacific Railway where, after the earth work had been completed the rail-

way was laid down on it at the rate of two and one-third miles per day. But the fact is the present organization of the Royal Engineers is not suited to any such purpose, all manual labor must be supplemented from the line. The highly trained sapper must be reserved for head-work and superintendence only. What can be more inconsistent than training a man to the use of the most delicate scientific instruments, to a high degree of skill in surveying, engraving, photography, &c., (to which many of these men attain) and then sending him to certain death at the head of a sap where the utmost result of his training is the excavation of a few cubic feet more earth than his unskilled comrade in the line can perform in similar time. There is nothing in the simple manual labour of siege or field works of pontooning or mining that might not just as well be performed by the infantry soldier especially, as a larger proportion of them come from the agricultural class, and probably have been accustomed to the use of the spade, the pick, and the bill-hook from boyhood.

The Royal Engineer private must be pushed forward to the "status" and training of the engine-driver, and to the charge of steam machinery for every military purpose to which it can be applied, with such other scientific duties, such as surveying and electric telegraphy as he performs at present ; and the private soldier of the line must relieve him of all simple manual labour. Instead of ordinary pontooning the sapper must be taught to construct and repair or extemporize railway bridges, and to construct a lattice girder in iron as quickly as he now puts together a gun platform. To do this he must be supplied with portable steam tools and the engines for moving and working them, and for moving the greater weight of "materiel" he will then require to carry with him. In India we can go on for a little while longer with our pioneer corps and our elephants, but at Chatham these must be replaced with steam tools and traction engines.

Now is the time in peace to carry out this organization not to wait for another war, and then rush into it in a fit of panic, or purchase up a hundred untried inventions on the chance of one of them proving useful. Little experiment is required now, as we have almost all the tools and machinery in daily work by thousands round us, though they might be improved as in the case of the morticing machine under notice, by mounting them on wheels to render them portable by traction engines.

The traction engines should be of varied style and design, but all self-propelling, and capable of imparting motive power to other machines ; some would be heavy with broad wheels for rolling, others should be provided with a drum or windlass, as in the steam-ploughs now so largely used, so as to be efficient for winding or hauling, or capable of hauling themselves up a steep incline by first sending out an anchor or grapnel attached to their steel wire ropes and then when they have reached a safe position reversing their motion and hauling up their loads after them. By this means a traction engine can get up almost any incline practicable for wheel carriages.



A troop of, say, six of these engines would cost from 12 to £15,000 and with their portable tools attached might take their place in line with the reserve of heavy artillery, and manœuvre with them at least as easily as our old 24-pounders were accustomed to do before the Crimean War, and the Royal Engineers might well be proud to pass in review with such a battery even though only in the second place of honour. The portable tools would be an additional expense, and must be selected with due regard to the physical geography, climate and other conditions of the scene of the intended campaign, but we should consider a portable deal and log sawing frame (Robinson's), punching and shearing, and drilling and rivetting machines, a mortar mill and a "Gwynne" pump or steam fire engine, with the wood-working machinery already noticed, indispensable.

Portable flour mills and ovens (Perkins'), which can be kept at work even on a march, for the Control Department, would probably be added, and a hydraulic Gyn or tubular iron sheers (in sections for portability) for lifting the heavy guns now employed in fortresses should accompany the troop. We have no good steam excavator as yet, but Jones' Coal-cutter worked by compressed air would be invaluable in military mining or even in the open sap. The whole science of war is daily altering and if it be true that at the recent siege of Strasburg, the approaches were eight feet deep, we may say that the sapper's occupation is gone for no amount of artillery fire can prevent the approach of a sap which exposes nothing to its aim, and which might be excavated by machinery to the very edge of the covert way by a few engineers without the loss of a man except by accidents of shells and sorties which could do little injury to it.

Let it not be supposed that in these remarks we are disparaging the present organisation of the corps of Royal Engineers, but we look naturally to them as the source of progress and improvements in these matters because we know that they must be adopted at home before we can hope for any extension of them in a minor degree to this country, yet while we recall with respect the names of Jones, Pasley, Douglas, Portlock, Reid, and Fowke, and of our own Presgrave, Cheape, Napier, Cunningham and Yule, we cannot but feel that our Engineers have still to attain that prestige in their own special art that they have won in every other branch of science. Our Peninsular and Indian experiences have partaken too much of the "de vive force" or "happy-go-lucky" system of Sir Thomas Morgan's School, and the siege of Sebastopol offered little more opportunity for scientific engineering than its great prototype of Troy.

The French have forfeited the Mural Crown won for them by Vauban, and retained down to the Siege of Antwerp in 1832, and the Prussians are ready to seize it, and already they are organising railway corps on a scale hitherto unthought of. Will our engineers contest it with them or will they tamely submit to be "seconded" into the peaceful pursuits of civil life.

### **Books wanted to purchase.**

**THE BRITISH INDIAN MILITARY REPOSITORY**, edited by Captain S. Parlbv, Bengal Artillery, Vol. V. and following Vols. or Nos. 8vo. 1826.

**THE EAST INDIA MILITARY CALENDAR**, 3 vols. 4to., published about 1823-25.

**DODWELL & MILES "ARMY LIST,"** of the three Indian Armies, large 8vo., date unknown.

**JAMES' MILITARY DICTIONARY**, thick, 8vo., date unknown.

**MULLER'S SCIENCE OF WAR**, 3 vols. 8vo., 1811.

**MEMOIRS OF GENERAL SIR R. GILLESPIE**, 1 vol., 8vo.

**MEMOIRS OF JOHN SHIIPP**, 3 vols., 8vo.

*Particulars of Price, Condition, &c., to be sent to the SECRETARY  
United Service Institution of India, at Simla.*

## INVENTIONS.

## I.

## Rifled Guns.

IN continuation of my remarks, *vide* page 105 No. 4 of Proceedings, U. S. I. of India, for the month of November last, I now beg to submit to the Council of this Journal, a description of the Gun with the following introductory remarks:—

“Rifling was first introduced in order to ensure a greater degree of accuracy in the flight of the spherical projectiles then in use; these being made of cast-iron, were subject to the following imperfections:—roughness of exterior, departure from the true spherical form, and want of homogeneity. The rotatory motion imparted to the ball, corrected these defects, but the initial velocity was lessened from increase of windage and friction; hence a shorter range. The adoption of elongated shot, provided with ribs or studs, to fit into the grooves, which followed shortly after, left nothing further to be desired on the score of range, as owing to their mechanical fit, smallness of diameter, and increased weight, little or no windage occurred, less atmospheric resistance, and greater penetration. That the spiral, or rotatory motion given to an elongated projectile, enables it to travel point foremost through the air for a long distance (length of the spiral, or velocity of rotation, varying with the length of the projectile) is correct, has been proved; but the judiciousness of rifling, or grooving out the bore of a gun, in order to impart this spiral motion to the shot, appeared to me very doubtful, indeed, apart from the consideration of increased weight of metal consequent on the above, and the severe strain due to a more rapid twist, in some descriptions, ensues the disturbance of the molecular forces in the metal of the gun; a point of no mean importance, though apparently ignored. It now occurred to me, that the same “spin” could be given to these shot by the introduction of a “central rifled rod” which would leave the bore of the piece intact. This rod, or “axial rifled bar” round which the shot is accurately fitted, also meets another requirement, *viz.*, that of reducing the weight of the bolt to that of the spherical shot, as originally intended to be discharged from the gun; thereby obviating the necessity of reducing and strengthening the bores of the guns in store, before they could be used, as at present. This appeared to me to be of much importance in point of economy, as the fitting of rifled tubes, of steel, and wrought-iron, to new, as well

as to old ordnance, has not resulted satisfactorily. Recent experiments have proved the laws affecting the expansion and contraction of metals to be as immutable as ever, for the tubes, after long or rapid firing, become heated, and expand, whilst their outer coiled, or cast-iron coating, remaining comparatively cool, checks or bars their outward expansion. This process, therefore, must perforce take place inwardly, and does so, in the form of wrinkles or irregular corrugations, or else it splits or cracks the metal. The 35-Ton Woolwich Gun, on which so much care, labor and money has been expended, has proved no exception to this rule. I now submit a description of the gun and its projectiles, with colored drawing annexed.

"This invention has for its object the attainment of a longer and more steady flight of a shot or projectile, and consists in applying the projective force by means of an annular cartridge approximately to the centre of gravity of a hollow cylindrical projectile, instead of as is usual at the base; a rotatory motion being imparted to the projectile by rifling it internally. My projectile is in the form of a hollow cylinder, thus destroying the vacuum in the rear of the shot, and is of the same internal diameter throughout its length. At the centre of gravity, or as nearly as possible to such centre of gravity of the shot when complete, a shoulder is formed and the external diameter of the shot considerably enlarged; this enlarged diameter is continued for a short distance of its length. The diameter is then decreased, till it meets the interior diameter of the projectile, or it may be convenient to enlarge the interior diameter, till it meets the external diameter. The line formed by the reduction of the external or the enlargement of the internal diameter, may be either straight lines, or any curves suitable for the head of a projectile. This projectile is rifled for the purpose of receiving additional rotatory motion from a rifled rod, centrally disposed in the bore of the cannon, and is of the same diameter as the internal diameter of the projectile. The annular cartridge is disposed between the shoulder and the extremity of the projectile, and is ignited from the vent, in the usual manner.

---

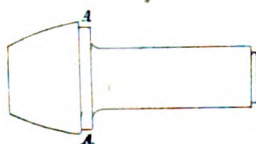
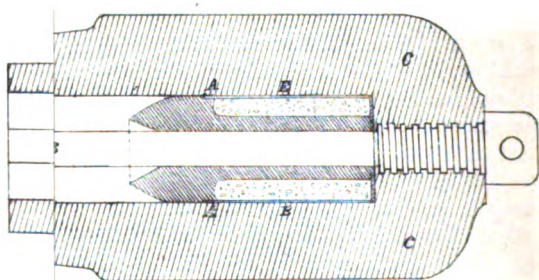
#### DESCRIPTION OF THE DRAWINGS.

FIG. 1.—Is a longitudinal section of my projectile and gun. The shot being shewn in the position it occupies, previous to the discharge of the gun. Upon a hollow cylindrical shot, and at the centre of gravity, or as nearly as possible to such centre of gravity, of the shot, when complete, the shoulder (A) is raised, and the external diameter of the shot enlarged to fit the bore of the gun. The head thus formed may be pointed in any suitable curve, or tapered inter-



A. D. 1870, APRIL  
TAYLOR'S SPE

U. S. I. Journal  
No. 1, Inventions.



nally and slightly externally as shown in section in the gun. At the extremity of the bore of the cannon or gun (C) a rifled rod (B) rises, of the same diameter as the internal diameter of the projectile. The cartridge (E) is disposed between the shoulder (A) and the base, and may be fired in any convenient manner.

FIG. 2.—Is an elevation of the projectile, shewn in section, at Fig. 1.

The following are the advantages that I claim for my Invention:—

1st.—Applying the projective force to the centre of gravity of a hollow cylindrical shot, in lieu of at the rear end of the projectile.

2ndly.—Flatness of trajectory, and greater initial velocity, the shot meeting with less atmospheric resistance. The air passing through the centre of the projectile, there can also be little or no vacuum in its rear.

3rdly.—The rifling which imparts the rotatory motion to the shot, being placed on a central rod, instead of, as is usual, by grooves in the bore, the gun does not become unservicable, or useless from the wear of the grooves, after heavy firing, as, by my system, a fresh rod or bar has only to be introduced, to make the piece as effective as before.

4thly.—The economical and ready convertibility of smooth-bored ordnance, old and new, into rifled cannon.

5thly.—The ready re-conversion of a gun, rifled on this system to its normal condition, by the simple but effective process of removing the rifled rod, and the fitting in its place, of a screwed plug, enabling shrapnell, grape, cannister, etc., to be fired on advancing bodies of Troops.

6th.—From these guns may also be projected my “shell war rockets,” by the removal of the screwed plug, and the filling up of the thread of the screw with a “bush.”

In conclusion, I have to add that the 2-pounder bronze gun, mentioned in my concluding remarks, page No. 105 of Proceedings U. S. I. of India, for November last, has been tried at the Artillery Range, Dum-Dum, and has already furnished results so satisfactory and remarkable as to induce me to believe that further experiments will be found of so important and decided a character as to render it in future, by reason of its simplicity and economy, a most important auxiliary in modern warfare.

ADDINGTON TAYLOR, MAJOR,

*8th Regiment, B. Native Infantry.*

P. S.—Some time I am afraid must elapse before I can lay before the Council the results of these experiments. Time and opportunity being wanting just now.

A. T.





II.

## On Punkah-pulling by Machinery for Barracks in India.

TO THE SECRETARY OF THE UNITED SERVICE  
INSTITUTION OF INDIA.

SIR,—As requested by you, I have the honor to forward my invention of improvement in punkah-pulling for Barracks in India.

The simplest way of doing this is by giving you an account of the experiments made at Roorkee, under Colonel Maunswell (Superintendent for the Ventilation of Barracks in India).

I went to Roorkee, on application, at my own expense, to lay before the Committee my invention, and got leave from the General commanding my Division.

Before going to Roorkee, I built a complete model, consisting of the fly-wheel (as shown in the Plate) and 72 model punkahs with everything correct, *viz.*, 3 Barrack rooms containing 24 punkahs each. The Barrack rooms were in a line, but the third at right angles to the two.

When I got to Roorkee, the Committee were so much pleased with the model, that they sanctioned its trial in full size, which I am sorry to say was not so successful, owing to several hindrances.

1st.—The fly-wheel was cast in a hurry.

2nd.—The stand for the fly-wheel was not strong enough.

3rd.—The bearings not properly made for the axle.

4th.—The cranks not properly secured to the axle.

The result was, that in turning the wheel when the punkahs were attached to the axle it jerked them more than was necessary. But in spite of all these grievances I managed to pull 42 of 15 feet and 11 of 22 feet punkah, making altogether 64 small punkahs of 15 feet in length.

The machinery was placed at the end of one of these Barrack-rooms parallel to each other, which necessitated the pulling of the punkah round three corners.

I succeeded in pulling these 64 punkahs with one coolie, who found it rather hard work on account of the machinery being so bad, but still he pulled them, giving them a swing of 6 feet 7 inches; whereas four coolies, without the wheel, could scarcely move them and only gave them a swing of 4 feet 6 inches.

I believe, to the best of my memory, that this is correct, but, the Committee not having sent me in a report of any kind, and it being nearly two years ago since I brought it before them, I could not swear to it being perfectly correct.

The machinery is very simple, and consists of an iron fly-wheel, 9 inches in diameter, weighted at an angle of 60 degrees to the crank, (as shown in the Plate). This wheel is simply turned round by a coolie (which I would recommend as the motive power for up-country, when the Barracks are scattered, but in large places, where the Barracks are close together, I would recommend steam). Of course, immediately the weight loses its centre of gravity, it pulls the punkahs, and when the weight is at the dead point at the bottom, the punkahs being their full pull, bring up the weight again to its former position.

The thing of most importance, remarked by the Ventilation Board, in my invention was, that I had imitated the "*motion of the punkah coolies arm,*" which has always been wanting in similar former inventions.

In fact, if the spectator did not know any thing of the wheel, he would not doubt for a moment that a *very good coolie* was pulling the punkahs.

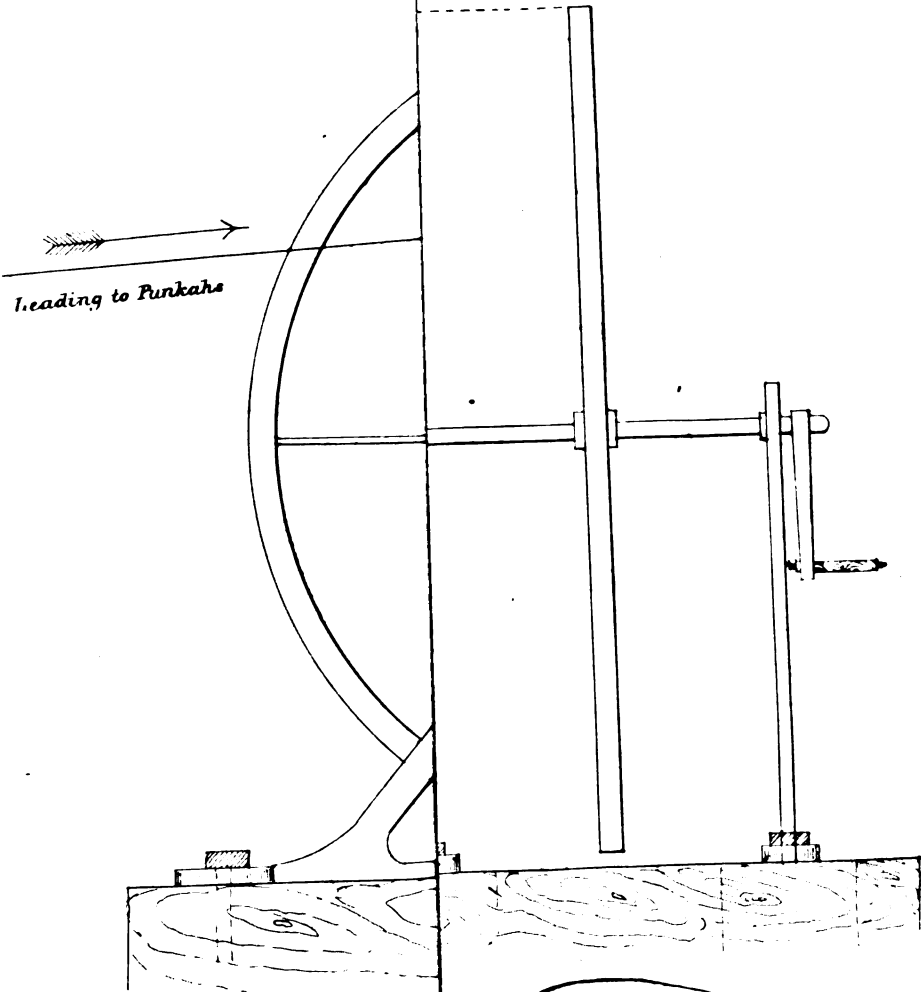
With steam I could pull the whole of the punkahs in Fort William with a 2-horses power engine. The only expense my invention would necessitate to Government would be a "Trained" Sergeant paid and told off for simply looking after these fly-wheels, and keeping the machinery in order, and in large places a man to look after the steam engine. The machinery, as may be seen, is very cheap, simple, and, when in motion, noiseless.

The advantages gained by my invention are as follows :—

I. Less natives are about Barracks, and, therefore, bring less disease among the men. I have heard medical men say very often, that most epidemics are the result of a multitude of natives that are allowed about Barracks, that they bring sickness with them out of cities and bazars. Also, it makes the men lazy, they get every thing done for them, and, therefore, get no exercise, and sleep all day. (Sic. Ed.)

II. The punkahs cannot stop because the coolie cannot; the wheel once started the coolie must go on, he would be knocked down if he went to sleep. This prevents the soldier from getting chilled or fever. By this I mean, that with the present system the soldier goes to sleep with a good swinging-punkah, after a time the coolie does the same, the punkah stops, and the man breaks out into perspiration, the coolie wakes suddenly, begins to pull violently, of course checks the perspiration and gives the man fever.

PROCEEDINGS U. S. I. No. V.  
INVENTIONS No. 2.



*A. Sumbull*  
*6<sup>th</sup> @ Royal*  
UNIV  
205



III. The punkah pulls all through at the regulated swing. That is to say, if the arm of the crank is 3 feet long, the punkahs must be pulled 6 feet, and the coolie cannot pull less if he tried.

IV. With this wheel the punkahs can be pulled with three different powers.

1st.—Hand power, (coolie.)

2nd.—Steam do.

3rd.—Water do.

By water I mean in a station like Peshawar where the water runs through the station. I must conclude by saying that if you would only sanction me to rig up Fort William in Calcutta with steam, I would save them a considerably large sum the very first year, and also prove my invention beneficial to the health of Troops.

If required, I can also send some drawings showing an improvement in slinging, connecting, and pulling punkahs round corners.

I have the honor to be, Sir,

Your obedient Servant,

H. TURNBULL, LIEUT,

6th Regiment.

---

*Copy of a Letter from the late Hon'ble Archdeacon Pratt, dated Murree, August 16th, 1872.*

MY DEAR MR. TURNBULL,—When I saw your model of a machine for pulling punkahs I was struck with the simplicity and apparent efficiency of the weight on the wheel for giving the jerk, which is so essential to the good working of a punkah. But as it was only a model I saw, I do not feel able to give a decisive opinion on the machine itself. I should very much like to see the machine itself at work, but that I fear is impracticable, as in my travels I am not going any where where it is set up.

The only real fear I had, that it might not work except by hand, you have removed by explaining in what way the steam engine is to act upon the machine.

It appeared to me that though a man's arm would have a certain amount of play in it to allow the weight to have its action in giving an impulse to the wheel and the jerk to the punkah, an ordinary double-acting steam-engine would subdue the whole motion to a uniform one. But this objection you entirely remove by saying that the steam-engine is only to lift the weight; that is, if the wheel and weight are afterwards to be left free to move faster than when the weight is ascending, and not be impeded by any connexion of the wheel with the engine in any way.

I am, Yours very truly,

(Sd.) J. H. PRATT.

TO LIEUT.-TURNBULL,  
6th Royals.



## III.

**The Heliograph or Sun Telegraph.**

TO THE SECRETARY OF THE UNITED SERVICE INSTITUTION  
OF INDIA, AT SIMLA.

KURRACHEE, 10th February, 1872.

DEAR SIR,—It struck me that a little information on the *Heliograph* might be interesting to the service, and as I cannot but think so simple a method of conveying communication between different Posts and Positions will surely be adopted, particularly in India's sunny clime, I asked Mr. Mance, of the Indo-European Telegraph Department, (to whom the entire credit is due for so simple a contrivance) to favor me with a brief description of his Instrument and the manner of working it. He most obligingly complied, and I have now the pleasure to forward the same for the consideration of the Council, with a view to its being published.

The subject has already been brought to the notice of the Bombay Government and His Excellency Sir A. Spencer, and is considered so well deserving of consideration, that a party of two officers and six non-commissioned officers and men of the 66th Regiment were placed at Mr. Mance's disposal for the purpose of being instructed in the use of the Instrument: and they have now left Kurrachee, in charge of a pair of the Instruments, to join the Army Signalling Department at Poornudhur near Poona, where it will be fairly tested.

As at present constructed they have been found to answer better at 15 miles than 5—the flash being more subdued and less trying to the eyes—but Mr. Mance informs me that there is no doubt the Instrument could be slightly modified for different descriptions of work if it should be adopted for Army Signalling. The spare mirrors recommended in Mr. Mance's penultimate para. were not sent with the party to Poona, as it was thought scarcely worth while going to additional expense unless Government decided to go on with the matter.

Yours faithfully,

W. BLAKE, LIEUT.-COL.,

Commandant, 1st Belooches.

---

THE HELIOGRAPH OR SUN TELEGRAPH.

Although the fact of the flash from a mirror being visible for many miles appears to have been known for more than a thou-

sand years, no advantage has been taken of the circumstance beyond using it to direct the instruments employed in taking the bearings of remote points during extensive surveys. Strange to say that although the desirability of being able to communicate at such times with the distant station must have been very great, no effort appear to have been made to this end, although the form of the Heliotropes might easily have been changed and adapted for the purpose.

I believe I am correct in stating that the Morse Telegraph Alphabet was first used in connection with this flashing light system in 1869 at the Jask Telegraph Station. We were thus enabled to converse with tolerable facility between points fully 8 miles apart. Recently however, better Instruments have been constructed and experiments made—the result being to shew the ease with which communication can be established over much greater distances (20 miles) at a speed exceeding ten words per minute.

The weight of the Instrument is about equal to that of a regulation musket—with the legs screwed on in readiness for working it rests conveniently on the shoulder, and can easily be carried by one person—in field service, it would, of course, be necessary that each Instrument should be attended by a party of two or three, but at a permanent station, where glasses of a larger size (12 inches in diameter) might be used, one signaller only would be required. After a few days' practice any telegraphist of moderate abilities, should be able to work it.

The Instrument can be set up ready for working in two or three minutes, and in the event of there being any other signalling party within range, their attention can be attracted by directing the flash towards the spot at which they may be expected—5 minutes are usually sufficient to establish communication.

It may be argued that this system could only be relied on during sunny weather, but it should be understood that it is only advocated as an auxilliary to other systems of Field Telegraphy—it would come into operation at distances when other methods are useless or tediously slow—in cheapness, range, and portability it does not compare unfavorably with existing systems of signalling, and there is no doubt that, in competent hands, it would prove an important acquisition during an Indian campaign.

The flashes are invisible to any one placed far to the right or left of the direct line, so that, from elevated points far distant, communication could be kept up with a fortress without the besiegers having any suspicion of the fact.

The adjustments necessary to keep the reflection of the sun in the same line and in view of the distant observer are similar to those



required in the Heliostat, such absolute precision is, however, unnecessary, an occasional turn of the screws at brief intervals being found sufficient to keep the flash in the right direction, a small lever similar to the simplest form of a telegraph key is attached to the base of the Instrument and connected to the rim of the mirror by a brass-rod, the length of which is regulated by the handle of the key. The long or short flashes representing the bars and dots of the Morse Alphabet are produced by the depression of the key for a longer or shorter period.

It is desirable to supplement each apparatus with an additional mirror with a light stand, as, in the first place, the spare glass would provide for accidents, and, secondly, it would enable the signallers to work with greater ease, should the sun be behind them and nearly in a line with the two stations. In this case the spare mirror faces the distant station, and the flashes are directed into it by the signalling glass, which is removed a few feet in advance and turned completely round so as to receive the full rays of the sun.

KURRACHEE, 7th February 1872.

HENRY MANCE.

---

Detailed instructions for working these Instruments accompanied the pair sent to Poona, with the party under Lieut. Stevenson, 66th Regt., a young officer who took great pains in mastering the subject.

W. B.

---

INDO EUROPEAN TELEGRAPH DEPARTMENT.

No. 869 OF 1871.

*Kurrachee 17th November 1871.*

FROM THE DIRECTOR MEKLAN COAST AND

SUB-MARINE TELEGRAPH,

TO COLONEL SIR W. J. MEREWETHER, K. C. S. I. & C. B.,

*Commissioner in Sind.*

SIR,—I have the honor to forward for your information copy of a Memorandum by Mr. Mance, the Superintendent of our Kurrachee Station, detailing the construction and mode of using the Heliograph or Sun Telegraph the working of which you did me the favor of coming to witness.

2. Since the date of Mr. Mance's Memo. I sent Assistant-Superintendent Mr. Sealy and one clerk across the frontier to a high part of the public range of hills 21 miles from the Office with a view to ascertain how far it was practicable to read the signals from the

Heliograph, and I found that at that distance I could myself read from 12 to 14 words per minute, and I fully believe that at 40 miles distance the signals would be as readily understood. The inter-communication at 21 miles was perfect.

3. I have shown the instrument to General Addison and his staff, as well as to many officers at this station who would doubtless be glad to give the result of their experience, and I should esteem it a great favor if you would kindly represent to Government your opinion of the uses that might be made of the Heliograph, which is particularly suited to the generally unclouded state of the sky in this province.

I have the honor to be &c.,

(Sd.) H. I. WALTON,

*Director, Mekran Coast and Sub-Marine Telegraph.*

---

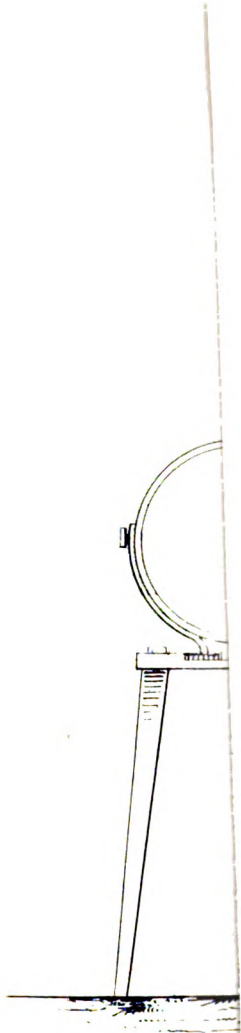
#### MEMO. ON THE HELIOGRAPH OR SUN TELEGRAPH.

Although the fact of the flash from a mirror being visible for many miles, appears to have been known for more than a thousand years, no advantage has been taken of the circumstance, beyond using it in the Trigonometrical Survey when taking distant bearings or sending intermittent flashes of sun light by means of revolving mirrors for the guidance of ships when entering ports.

The instruments used by surveyors enable them to transmit flashes of reflected light between stations 50 miles apart from each other, but, although the desirability of being able to communicate at such times with the distant observer must have been very great, strange to say no effort appears to have been made to this end, although the form of the Heliotrope might have easily been changed and adapted for the purpose.

I believe I am correct in stating that this was done for the first time in the autumn of 1869 at the Jask Telegraph Station, where it became part of my duty to conduct some practice with the lamps used for signalling by night. Parties were formed, who proceeded to a village about 9 miles distant across the bay, and, on one of these occasions, a looking-glass was taken to see if the flashes were visible at that distance; they were found to be perfectly distinct but too intermittent to be made use of for Telegraph purposes.

At the conclusion of the experiment the distant glass by a lucky chance was left leaning against the side of the hut, and, about half an hour afterwards, my attention was drawn to the fact, by a faint gleam of light, which gradually increasing in brilliancy as the image of the sun became more fully reflected gave back a prolonged flash so



H  
D



dazzling and steady, that I was at once convinced of the possibility of using a system of long and short flashes analogous to the dashes and dots which compose the Morse Telegraph Alphabet.

Instruments of rude construction were at once made by myself and Mr. Sealy, the Assistant-Superintendent, who throughout the experiments has always taken the greatest interest in furthering the development of the idea. Such Instruments, however, as we were able to construct, were necessarily very imperfect, they were nevertheless sufficiently effective to demonstrate the possibility of exchanging messages over a distance of 8 or 9 miles—a distance which I have no doubt will be exceeded when using the far superior Instruments which have just been constructed in the workshops of this department.

The adjustments necessary to obviate the constantly changing angle of incidence are very similar to those required in the Heliostat and Equatorial Telescope. Such absolute precision, however, is unnecessary, an occasional turn of the screw at brief intervals is found sufficient to direct the flashes in the true line. A small lever similar to the simplest form of a telegraph key is attached to the base of the Instrument and connected to the Mirror by a brass rod, the long or short flashes representing the bars and dots of the Morse Alphabet being rendered by the depression of the key for a longer or shorter period.

It would be very desirable to supplement each apparatus with an additional mirror on a light stand, as, in the first place, it would provide for accidents, and, secondly, it would enable the signaller to continue working should the sun be nearly in a line with the two stations and near the horizon.

Hitherto we have never resorted to the second glass, but there is no doubt its use would sometimes be of great service. Even with the additional mirror it would still admit of being easily carried and managed by one person, and after a few days practice any telegraphist of moderate abilities should be able to work it.

The Instrument can be set-up ready for working in a few minutes, and in the event of there being any other signalling party within range their attention can be attracted by directing the flash towards the spot at which they may be expected, 5 minutes being generally sufficient to establish communication. The object of the various adjustments is so obvious that it will scarcely be necessary to describe it at further length; it will perhaps be sufficient to say that with our present practice, which has been limited to four occasions, we have been able to transmit freely and accurately at the rate of 10 or 12 words per minute between points five or six miles distant. I have no hesitation in stating that in a few days we shall work through 4 or 5 times that distance.

It might be argued that this system could only be relied on during sunny weather, but it should be understood that it is only advocated as an auxilliary to the night lamps. The sun telegraph would come into operation at distances where all other system are useless or tediously slow. In cheapness, rapidity of communication, range and portability it will compare favorably with existing systems of signalling, and there is no doubt that in proper hands it would prove an important acquisition during an Indian campaign.

Should you consider it desirable to obtain further proof as to the utility of this method of signalling, and authorize the construction of one or two additional instruments, the whole country for 20 miles round Kurrachee might be placed in communication with the general commanding the station within a few hours after receiving intimation of his wishes to that effect.

(Sd.) HENRY MANCE,  
KURRACHEE; } *Supdt. in charge Kurrachee Station,*  
6th November 1871. } *Indo-European Telegraph Department.*  
Forwarded for the information of H. J. Walton, Esq. Director,  
Mekran Coast and Submarine Telegraph Department.  
(Sd.) HENRY MANCE.

NO. 805 OF 1871.

FROM COLONEL SIR W. J. MEREWETHER, K. C. S. I. & C. B.,  
*Commissioner in Sind.*

TO HIS EXCELLENCY THE RIGHT HON'BLE  
SIR W. R. SEYMOUR V. FITZGERALD, G. C. S. I.,  
*Governor and President in Council, Bombay.*  
COMMISSIONER'S OFFICE,

*Camp on the Indus, 8th December, 1878.*

RIGHT HON'BLE SIR,—I have the honor to forward herewith copy of a letter from Mr. Walton, Director, Mekran Coast and Submarine Telegraph, communicating a Memorandum by Mr. Mance, Superintendent in charge Kurrachee Telegraph Station, on a very simple Instrument cleverly contrived by that gentleman for the use of the sun's rays in telegraphy.

2. The Instrument is merely a common glass mirror fixed on a tripod stand with horizontal and vertical adjusting screws, and used to flash the sun in somewhat the same manner as the Heliotrope worked in the Trigonometrical Survey. Two of these mirrors placed at required distances are brought into exact adjustment so as to send a steady direct flash. To the base of the Instrument, as directed by Mr. Mance, a small lever similar to the simplest form of a telegraph key is attached, connected to the mirror by a brass rod, and by the depression of this key for a longer or shorter period long and short flashes can be given representing the bars and dots of the Morse Alphabet.

3. Mr. Walton was good enough to show me trials of this Instrument twice, once at his own office, and again from Government House, the opposite mirrors being both times at Manora, a distance of between 5 and 6 miles. The relative position of the mirrors was found without the least delay the bright flash showing this. Immediately chance messages were sent backwards and forwards, and on all occasions were read straight off without the necessity of any repetition.

4. I cannot but think that this would prove a most invaluable aid to Military Telegraphy. It has been used successfully by Mr. Walton for a distance of 21 miles, and there is every reason to believe that messages may be equally well transmitted for 40 to 50 miles. In most parts of India, where the sun is generally bright for the greater part of the day, it would be employed with great advantage.

4. Mr. Walton has unfortunately omitted to mention the cost of each Instrument, but I believe I am correct in saying that it can be made up in any workshops for 30 or 40 rupees.

6. The School of Telegraphy, which is now assembled in the Deccan, would be an excellent place to test its merits, and if your Excellency so desired it, I could easily get two such Instruments made up at the Telegraph workshops, and Mr. Mance would be ready at any time to teach two or three non-commissioned officers, if General Addison were allowed to select them from the European Regiment at Kurrachee. These, when proficient, might be sent to the Deccan with the Instruments to have them thoroughly tried, and to teach other men there.

I have the honor to be &c.,

(Sd.) W. L. MEREWETHER, COLONEL,  
*Commissioner in Sind.*

*Army Telegraphy.*

Military Department.

No. 391

Bombay Castle,

23rd January 1872.

Letter from the Commissioner in Sind, No. 805, dated 8th December 1871.

Forwards a letter from Mr. Walton, Director, Mekran Coast and Sub-Marine Telegraph, submitting a Memorandum by Mr. Mance, Superintendent in charge Kurrachee Telegraph Station, on an Instrument contrived by him for the use of the sun's rays in telegraphy. States that in his opinion this Instrument would prove a most invaluable aid to Military Telegraphy, and that the School of Telegraphy, which is now assembled in the Deccan, would be an excellent place to test its merits.

Report by the Quarter Master General of the Army, No. 16-11-109, dated 6th January 1872.

Report by the Controlier of Military Accounts, No. 76, dated 16th January 1872.

RESOLUTION—Two Instruments may be supplied to the School of Telegraphy at Poona.

The Government of India to be informed.

Major-General,  
Secretary to Government.

To

THE COMMISSIONER IN SIND.  
THE QUARTER-MASTER GENERAL.  
THE CONTROLLER OF MILITARY ACCOUNTS.

Military Department.  
No. 392

*Army Telegraphy.*  
Bombay Castle,  
23rd January 1879.

Telegram from the Director, Mekran Coast Sub-Marine Telegraph, dated 23rd January 1872.

"Letter (805) dated 8th December, from Commissioner Sind. I am sending two Heliograph Instruments to Army School of signalling. Two officers of 66th going, have *not* had sufficient time to learn use of Instrument. Would recommend officer of this Department being sent for one month by same opportunity to teach system. Steamer leaves Friday morning."

RESOLUTION—The Quarter-Master General to be asked by telegraph to detain one of the officers alluded to in Mr. Walton's telegram until he has become thoroughly acquainted with the use of the Heliograph.

Major-General,  
Secretary to Government.

To

THE DIRECTOR, MEKRAN COAST AND SUB-MARINE TELEGRAPH.  
(With copy of Government Resolution No. 391 of this date)  
THE QUARTER MASTER GENERAL.  
THE CONTROLLER OF MILITARY ACCOUNTS.  
THE COMMISSIONER IN SIND.

NOTE.—There is nothing very novel in the use of the Helio-stat for flashing signals. The Russians had a semaphore of this description at Sebastopol on the north side of the harbour, and Mr. Galton describes a neat little portable Helio-stat for use in the field in his "Art of Travel," 3rd Edition, pages 150 to 153, but Mr. Mance deserves much credit for the simple mechanism which has converted it into a Telegraphic Instrument, and the application to it of the "Morse" Alphabet, and we trust it will be speedily introduced in this country as a supplementary means of signalling in the Field.



# CONTENTS.

VOL. II. No. 7.

## ORIGINAL PAPERS.

|                                                                                                                                                                                  |     |     |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|----|
| I. Lecture on Mitrailleurs and their special uses for India, by MAJOR<br>GEORGE V. FOSBERY, v.c., H. M.'s 35th Regt. N.I.                                                        | ... | ... | 1  |
| II. The Tactical Front of Modern Attack                                                                                                                                          | ... | ... | 17 |
| III. Our Bases of operation and lines of communication in India considered<br>especially with regard to the strategic importance of Allahabad, by Lieut.<br>G. T. PLUNKETT, R.E. | ... | ... | 27 |
| IV. Narrative of the Cachar Column, Looshai Expeditionary force, by<br>LIEUT.-COL. FRED. ROBERTS, v.c., Deputy Quarter Master General                                            | ... | ... | 35 |
| V. On the Defence of Railways in India                                                                                                                                           | ... | ... | 55 |
| VI. Army Signalling, by CAPT. R. HENNEL, 25th Regt. N.L.I.                                                                                                                       | ... | ... | 65 |
| VII. A few Notes on the Carriage of Regimental Reserve Ammunition, etc.,<br>by CAPT. COLOGAN, B.S.C.                                                                             | ... | ... | 83 |
| VIII. Retrospect of the Camp of Exercise, Delhi, 1871-72.                                                                                                                        | ... | ... | 87 |

## CORRESPONDENCE.

|                             |     |     |     |     |
|-----------------------------|-----|-----|-----|-----|
| Army Signalling, Heliograph | ... | ... | ... | 101 |
|-----------------------------|-----|-----|-----|-----|

## REVIEW.

|                                                                                                                 |     |     |     |     |
|-----------------------------------------------------------------------------------------------------------------|-----|-----|-----|-----|
| Manual of Field Fortification, Military Sketching and Reconnaissance, pub-<br>lished by Authority, London, 1871 | ... | ... | ... | 107 |
|-----------------------------------------------------------------------------------------------------------------|-----|-----|-----|-----|





# CONTENTS.

VOL. II., No. 9.

## ORIGINAL PAPERS.

|                                                                                                                                                   |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------|----|
| I. A Retrospect of the Second Burmese War and Proposed Plan of Operations for a future Campaign in Ava, by Lieut. Edward Browne, 2-21st Fusiliers | 1  |
| II. The Equipment of Irregular Cavalry                                                                                                            | 19 |
| III. The Organization of the Native Infantry, by Lieut.-Col. J. J. H. Gordon, 29th Punjab Infantry                                                | 25 |
| IV. On the Commissioned and Non-Commissioned ranks of the Native Infantry, and how they might be reorganised with a view to increased efficiency  | 31 |
| V. On the combination of Horse Artillery and Cavalry, by Lieutenant A. E. Turner, Royal Horse Artillery                                           | 39 |
| VI. Cryptography, by Captain Elphinstone Begbie, Madras Sappers and Miners                                                                        | 63 |

## SELECTIONS.

|                                                      |    |
|------------------------------------------------------|----|
| The Prussian War-Game                                | 47 |
| The German official account of the Franco-German War | 71 |

## NOTICES.

|                                                         |     |
|---------------------------------------------------------|-----|
| The Royal United Service Institution, Whitehall, London | 97  |
| To Contributors                                         | 100 |

*LIST of Officers who have agreed to undertake the duties of Corresponding Members for the United Service Institution of India at stations noted opposite their names.*

| NAMES.                             | CORPS.                           | STATIONS.                 |
|------------------------------------|----------------------------------|---------------------------|
| Lieut.-Col. W. J. Gray             | Royal Artillery                  | Allahabad.                |
| Captain Bythell                    | Staff Officer                    | Asseergurh.               |
| Colonel H. S. Adams                | 13th Bombay Nat. Infantry        | Ahmednuggur.              |
| Major Conway-Gordon                | B. M. Hydrabad Contingent        | Aurungabad.               |
| Lt.-Col. H. N. D. Prendergast      | Royal Engineers                  | Bangalore.                |
| Captain A. G. Waterfield           | Station Staff Officer            | Barrackpore.              |
| Major W. Hicks                     | Brigade Major                    | Belgaum.                  |
| Lieut.-Colonel W. Barlow           | 5th Native Infantry              | Benares.                  |
| Captain G. Merewether, R. E.       | P. W. Department                 | Bombay.                   |
| Lieutenant E. R. Elles             | Royal Artillery                  | Bunnoo.                   |
| Major J. B. Hardy                  | Ditto                            | Cawnpore.                 |
| Captain D. McNeil                  | 41st Madras Native Infantry      | Cuttack.                  |
| Lieut.-Colonel Blair Reid          | Bengal Staff Corps               | Dalhousie (temporarily).  |
| Captain A. Battye                  | 2nd Goorkhas                     | Dehra Doon.               |
| Captain G. B. Wolsely              | Station Staff Officer            | Delhi.                    |
| Major P. Story                     | 1st Goorkhas                     | Dhurmshala.               |
| Dr. C. R. Francis                  | Dy. Insp. Genl. of Hospitals     | Dinapore.                 |
| Captain W. Galbraith               | 85th Light Infantry              | Dugshai.                  |
| Captain G. Lamb                    | Ordnance Department              | Ferozepore.               |
| Colonel R. Cadell, C.B., S.C.      | Royal Artillery                  | Fort St. George. [nopoly. |
| Major B. L. Forster                | Ditto                            | Fort St. George & Trichi. |
| Captain W. Ker                     | 3rd Buffs                        | Fort William              |
| Captain P. C. Story                | 26th Regiment                    | Fyzabad.                  |
| Captain J. F. F. Cologan           | 18th Native Infantry             | Goruckpore.               |
| Lieut.-Col. H. Beville, C.B., S.C. | 1st Beloches                     | Hyderabad, Sind.          |
| Lieutenant W. S. Peat              | Brigade Major                    | Jacobabad.                |
| Captain Fitz. G. Gallwey           | Adjutant, 8th Brigade, R. A.     | Lucknow.                  |
| Captain R. H. Rosser               | 37th Regiment                    | Meer Meer.                |
| Captain Studdy                     | Royal Artillery                  | Meerut.                   |
| Captain A. G. Handcock             | 6th Native Infantry              | Morar.                    |
| Captain R. B. Campbell             | Guides                           | Murdan.                   |
| Captain A. C. Crookshank           | 32nd Native Infantry             | Umballa.                  |
| Captain G. W. B. Collis            | 6th Royal Regiment               | Peshawur. bleshwar.       |
| Captain J. Van-Straubenzie         | Royal Artillery                  | Poona, Bombay or Maha-    |
| Captain Edward Gunter              | 59th Regt. Adj. Genl's Dept.     | Poona and Bombay gene-    |
| Captain F. S. S. Brind             | 17th Regt. Station Staff Officer | Shillong. rally.          |
| Lieutenant W. Macdonald            | 12th K. G. Regiment              | Sealkote.                 |
| Lieutenant R. G. Kennedy           | 18th Hussars                     | Secundrabad.              |
| Lieut.-Colonel W. Dowell           | Royal Artillery                  | Seetapore.                |
| Captain H. Collett                 | Deputy Asst. Qr. Mr. Genl.       | Umballa.                  |



# CONTENTS.

VOL. II., No. 10.

## ORIGINAL PAPERS.

|                                                                                                                                                                                                                                                                                                                | <i>Page.</i> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| I. On the Strategic Value of Cashmere in connection with the defence of our N. W. Frontier, by Lieut.-Colonel D. J. F. Newall, R. A. (a paper read at the branch U. S. Institute, Morar, Gwalior) ...                                                                                                          | 1            |
| II. Note on Range Finding, by Captain J. Creagh...                                                                                                                                                                                                                                                             | 13           |
| III. European Non-Commissioned Officers with Native Infantry Regiments                                                                                                                                                                                                                                         | 37           |
| IV. Is a Radical change in the Tactical formation of our Infantry really necessary, a lecture delivered at the Soldiers' Institute, Fort William, Calcutta, by Lieut.-Colonel and Brevet Col. The Hon. Frederic Thesiger, C. B., A. D. C. to the Queen, Local Major General, and Adjutant General in India ... | 49           |
| V. The Education of Native Officers in the Indian Army, by Captain D. M. Strong, 10th Bengal Lancers ...                                                                                                                                                                                                       | 63           |
| VI. On the Development of the Resources of India in a Military point of view, by Lieutenant (Local Captain) J. Colquhoun, R. A., Commissary of Ordnance ...                                                                                                                                                    | 67           |
| VII. On a compressed Air Engine for working Pankas in the lines of European Regiments in India, by Colonel Osborne, C. B., 1-6th Regiment ...                                                                                                                                                                  | 83           |
| VIII. Modern Infantry Tactics, by Captain F. Adam, Staff Officer, Neemuch                                                                                                                                                                                                                                      | 93           |

## REVIEW.

|                         |     |
|-------------------------|-----|
| Hasty Entrenchments ... | 113 |
|-------------------------|-----|

*LIST of Officers who have agreed to undertake the duties of Corresponding Members for the United Service Institution of India at stations noted opposite their names.*

| NAMES.                             | CORPS.                           | STATIONS.                 |
|------------------------------------|----------------------------------|---------------------------|
| Lieutenant E. R. Elles             | Royal Artillery                  | Abbotabad.                |
| Lieut.-Col. W. J. Gray             | Royal Artillery                  | Allahabad.                |
| Captain Bythell                    | Staff Officer                    | Asseergurh.               |
| Colonel H. S. Adams                | 13th Bombay Nat. Infantry        | Ahmednuggur.              |
| Major Conway-Gordon                | B. M. Hyderabad Contingent       | Aurangabad.               |
| Lt.-Col. H. N. D. Prendergast      | Royal Engineers                  | Bangalore.                |
| Captain A. G. Waterfield           | Station Staff Officer            | Barrackpore.              |
| Major W. Hicks                     | Brigade Major                    | Belgaum.                  |
| Lieut.-Colonel W. Barlow           | 5th Native Infantry              | Benares.                  |
| Captain G. Merewether, R. R.       | P. W. Department                 | Bombay.                   |
| Captain D. McNeil                  | 41st Madras Native Infantry      | Cuttack.                  |
| Captain A. Battye                  | 2nd Goorkhas                     | Dehra Doon.               |
| Captain G. B. Wolsely              | Station Staff Officer            | Delhi.                    |
| Major P. Story                     | 1st Goorkhas                     | Dhumsala.                 |
| Dr. C. R. Francis                  | Dy. Insp. Genl. of Hospitals,    | Dinapore.                 |
| Captain G. Lamb                    | Ordnance Department              | Ferozepore.               |
| Colonel R. Cadell, C.B., S.C.      | Royal Artillery                  | Fort St. George. [nopoly. |
| Major B. L. Forster                | Ditto                            | Fort St. George & Trichi. |
| Captain W. Ker                     | 3rd Buffs                        | Fort William              |
| Captain P. C. Story                | 26th Regiment                    | Fyzabad.                  |
| Captain J. F. F. Cogan.            | 18th Native Infantry             | Goruckpore.               |
| Lieut.-Col. H. Beville, C.B., S.C. | 1st Beloches                     | Hyderabad, Sind.          |
| Lieutenant W. S. Peat              | Brigade Major                    | Jacobabad.                |
| Captain R. H. Roaser               | 37th Regiment                    | Dugshaie.                 |
| Captain Studdy                     | Royal Artillery                  | Umballa.                  |
| Captain R. B. Campbell             | Guides                           | Murda.                    |
| Captain G. W. B. Collis            | 6th Royal Regiment               | Sealkote. bleshwar.       |
| Captain J. Van-Straubenzie         | Royal Artillery                  | Poona, Bombay or Maba-    |
| Captain Edward Gunter              | 59th Regt. Adj. Genl's Dept.     | Poona and Bombay gene-    |
| Captain F. S. S. Brind             | 17th Regt. Station Staff Officer | Shillong. [rally.         |
| Lieutenant W. Macdonald            | 12th K. G. Regiment              | Peshawur.                 |
| Lieutenant R. G. Kennedy           | 18th Hussars                     | Secundrabad.              |
| Lieut.-Colonel W. Dowell           | Royal Artillery                  | Seetapore                 |



# CONTENTS.

VOL. II., No. 11.

## ORIGINAL PAPERS.

|                                                                                                                                                                                                                                  | <i>Page.</i> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| I. Historical Record of the late 26th Regiment Bengal Native (Light) Infantry, formerly 1st Battalion 13th Native Infantry, compiled from notes by the late Lieut. General Sir William Richards, K.C.B., Colonel of the Regiment | 1            |
| II. Improvement of the Pension Rules of the Native Army, Discharge of Native Soldiers, and abolition of Annual Invaliding Committees, by Lieut.-Col. H. Beville, Commandant 1st Belooch Regiment                                 | 15           |
| III. The Morse Code, by H. C. Mance, Superintendent Government Persian Gulf Telegraph, Bushire                                                                                                                                   | 19           |
| IV. Notes on the late Camp of Exercise, by Captain R. Hennell, Bombay Sappers and Miners, late 20th Regiment Native Light Infantry                                                                                               | 29           |
| V. Infantry Attacks, by Major Lynden Bell, Commanding 1st Battalion 6th Regiment                                                                                                                                                 | 43           |
| VI. Records of the 27th or 1st Belooch Regiment Light Infantry, by Lieutenant Colonel Henry Beville, Commandant 1st Belooch Regiment Light Infantry                                                                              | 45           |
| VII. The Selection and Training of Native Officers, by Lieutenant G. T. Plunkett, R. E.                                                                                                                                          | 55           |
| VIII. Army Organization, Madras Establishment, by Lieut.-Colonel H. Claridge, 37th Madras Grenadiers                                                                                                                             | 61           |
| IX. On the Organization of a Transport Department suitable to the Exigencies of the British Army in any part of the Globe, by Peshawur                                                                                           | 67           |
| X. Cavalry at the Camp, 1872-73, by Captain Osmond Barnes, 10th Bengal Lancers                                                                                                                                                   | 125          |

# CORRESPONDING MEMBERS.

| NAMES.                            | CORPS.                           | STATIONS.                 |
|-----------------------------------|----------------------------------|---------------------------|
| Lieutenant E. R. Elles ...        | Royal Artillery ...              | Abbottabad.               |
| Lieut.-Col. W. J. Gray ...        | Royal Artillery ...              | Allahabad.                |
| Captain Bythell ...               | Staff Officer ...                | Asseergurh.               |
| Colonel H. A. Adams ...           | 13th Bombay Nat. Infantry ...    | Ahmednuggur.              |
| Major V. C. Conway-Gordon...      | B. M. Hyderabad Contingent...    | Aurangabad.               |
| Lt.-Col. H. N. D. Prendergast     | Royal Engineers ...              | Bangalore.                |
| Captain A. G. Waterfield ...      | Station Staff Officer ...        | Barrackpore.              |
| Lieut.-Colonel W. Barlow ...      | 5th Native Infantry ...          | Meerut.                   |
| Capt. G. L. C. Merewether, R.E.   | P. W. Department ...             | Bombay.*                  |
| Captain D. McNeil ...             | 41st Madras Native Infantry      | Cuttack.                  |
| Captain A. Battye ...             | 2nd Goorkhas ...                 | Dehra Doon.               |
| Captain G. B. Wolsely ...         | Station Staff Officer ...        | Morar.                    |
| Lieut. G. J. Churchill ...        | ...                              | Dhumsala.                 |
| Dr. C. R. Francis ...             | Dy. Insp. Genl. of Hospitals,    | Dinapore. [nopoly.        |
| Major B. L. Forster ...           | Royal Artillery ...              | Fort St. George & Trichi- |
| Captain W. Ker ...                | 3rd Buffs ...                    | Fort William              |
| Lieut.-Col. H. Beville, CB., & C. | 1st Beloches ...                 | Hyderabad, Sind, Kurra-   |
| Lieutenant W. S. Peat ...         | Brigade Major ...                | Jacobabad. [chee.         |
| Captain R. H. Rosser ...          | 37th Regiment ...                | Dugshaie.                 |
| Captain Studdy ...                | Royal Artillery ...              | Umballa.                  |
| Captain G. W. B. Collis ...       | 6th Royal Regiment ...           | Sealkote.                 |
| Captain Edward Gunter ...         | 59th Regt. Adj. Genl's Dept.     | Poona and Bombay gene-    |
| Captain F. S. S. Brind ...        | 17th Regt. Station Staff Officer | Shillong. [rally.         |
| Lieutenant R. G. Kennedy ...      | 18th Hussars ...                 | Secundrabad.              |



## CONTENTS.

Vol. II., No. 12.

### ORIGINAL PAPERS.

|                                                                                                                                                                                                                    | <i>Page.</i> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| I. On Military Colonization of the Mountain Ranges of India. A Lecture delivered at the Branch U. S. Institute for India, at Darjeeling, on the 30th October 1872, by Lieut.-Colonel D. J. F. Newall, R. A. ... .. | 1            |
| II. Notes on the use of Infantry for Attack, by Major A. Schmid ...                                                                                                                                                | 35           |
| III. The 14th Bengal Lancers, "Murray's Jat Horse," their Advent in Hindustan, Traditional Customs and Field Services, by Lieut.-Colonel B. W. Ryall, Offg. Commdt. 14th Bengal Lancers ... ..                     | 51           |
| IV. Notes on the Sikhs as Soldiers for our Army, by Captain C. Price, 2nd in Command, 1st Sikh Infantry ...                                                                                                        | 57           |
| V. The Administration of Military Law, its Defects and their Correctives, by Captain W. E. Chambers, Bengal Staff Corps ...                                                                                        | 71           |
| VI. On Gunnery Instruction as carried out in India, by Q. V. P. ...                                                                                                                                                | 77           |

# Corresponding Members.

| NAMES.                            | CORPS.                         | STATIONS.                 |
|-----------------------------------|--------------------------------|---------------------------|
| Lient.-Col. W. J. Gray ...        | Royal Artillery ...            | Meean Meer.               |
| Captain Bythell ...               | Staff Officer ...              | Asseergurh.               |
| Colonel H. A. Adams ...           | 13th Bombay Nat. Infantry ...  | Ahmednuggur.              |
| Major V. C. Conway-Gordon...      | B. M. Hyderabad Contingent...  | Aurangabad.               |
| Lt.-Col. H. N. D. Prendergast     | Royal Engineers ...            | Bangalore.                |
| Lient.-Colonel W. Barlow ...      | 5th Native Infantry ...        | Meerut.                   |
| Capt. G. L. C. Merewether, R.E.   | P. W. Department ...           | Bombay.                   |
| Captain A. Battye ...             | 2nd Goorkhas ...               | Dehra Doon.               |
| Captain G. B. Wolseley ...        | B. M. ...                      | Morar.                    |
| Lient. G. E. Churchill ...        | ... ..                         | Dhumsala.                 |
| Dr. C. R. Francis ...             | Dy. Surgn. Genl. of Hospitals, | Dinapore. [unopoly.       |
| Major B. L. Forster ...           | Royal Artillery ...            | Fort St. George & Trichi- |
| Captain W. Ker ...                | 3rd Buffs ...                  | Fort William              |
| Lient.-Col. H. Beville, cn., B.C. | 1st Beloches ...               | Kurrachee.                |
| Lieutenant W. S. Peat ...         | Brigade Major ...              | Jacobabad.                |
| Captain R. H. Rosser ...          | 37th Regiment ...              | Dugshaie.                 |
| Captain Studdy ...                | Royal Artillery ...            | Umballa.                  |
| Captain G. W. B. Collis ...       | 6th Royal Regiment ...         | Sealkote.                 |
| Captain Edward Gunter ...         | 59th Regt. Adj't. Genl's Dept. | Poona and Bombay gene-    |
| Major W. Twentymen ...            | Brigade Major Nagpore Force    | Kamptec. [rally.          |
| Captain A. D. Batter ...          | Brigade Major Eastern Fron-    | Shillong.                 |
|                                   | tier District                  |                           |

Corresponding Members leaving stations are requested to ask some other member to take up the duties, merely reporting the same to the Secretary.

# ORIGINAL PAPERS.



## I.

### LECTURE

#### ON MITRAILLEURS AND THEIR SPECIAL USES FOR INDIA,

BY MAJOR GEORGE V. FOSBERY, V.C.,

*H. M.'s 35th Regt. N.I.*

GENTLEMEN,

I consider myself honoured, by the invitation given me to address you this evening, on the subject of Mitrailleurs, machines, with which I had some connexion at a time when they were comparatively little known in England.

Late events have now rendered them, by name at least, familiar to every one, and probably many of you have definite information, regarding the weapons of which I propose to treat. If, therefore, I should sometimes state things which you already know, I must beg that you will kindly bear with me, for the lectures delivered here, reach, in their printed form, large numbers of officers, who have, by the necessities of our Indian service, smaller means of information than ourselves, and in speaking this evening, I feel that I address an invisible, as well as a visible audience, and owe to the one a duty, which I am sure you who compose the other, would be sorry to see me neglect. I shall, therefore, begin by defining the weapons of which I propose to treat, and, after describing some of these, with their effects, proceed to detail the positions, for which I believe them to be more especially adapted.

The *Mitrailleur proper*, then may be defined as an instrument throwing separately and rapidly, large numbers of small projectiles, a *hailstorm* of them in fact, as the name implies. The term should not include such arms as Colonel Claxton's *Artillerie à bras*, or the larger Gatling guns of 1 inch calibre.

The projectiles of the true *Mitrailleur*, ranging in weight from 300 to 800 grains, would approximate the weapon, on the one hand to the Austrian, on the other to the French models—and somewhere between these extremes, I believe the most effective mean to lie.



For, in perfecting an arm for the *intermediate place*, which, such as these must always occupy, not only have its range, accuracy and penetration to be considered, but also the weights of gun, limber, wheels and ammunition, in order to develop *economically*, as well as scientifically, the effects we desire. We must not, for instance, take into the field a weighty piece, fed with heavy and expensive cartridges, which will neither blow up, burn, nor batter our enemy and his defences, but only destroy individual lives at the expenditure of half a pound of lead apiece ; it is no use to kill men " too much " as the French said when speaking of the German Artillery fire, nor again falling into the other extreme, should we sacrifice our command of ground and precision of performance, to the attractions of toy guns and feather weight ammunition.

As a rule, however, all the inventors of Mitrailleurs have performed either too much, or too little, with their first contrivances, no just conception having been formed as to what should be the limit of weight allowed for a machine which can never do *all* artillery work, what should be its ranges, or what effect it should be expected to have within them.

For this reason the majority of inventors have tried to suit every one's notion on the subject, by the construction of separate machines, from the weight and size of a 6-pounder gun to that of a garden wheelbarrow. In the one case the ass has carried the miller, in the other, the miller, the ass.

But we would never have brought our artillery to the perfect state in which we find it, the admiration of all foreign services as well as of our own, had the weight of gun and ammunition and their proportions to carriage, and power of draft, been primarily evolved from so chaotic a state of opinion.

Take as an instance of what I mean, the inception of the steam fire engine. The conditions were all known, and were taken into consideration by shrewd men of business. London houses were known to have a certain maximum height, to extinguish fire in them therefore, a certain volume of water per minute must be thrown beyond this height, this must be done moreover by a machine of power sufficient for its object, and of such a weight, that four horses could move it, say at twelve miles an hour, to the extremity of its station radius. On its arrival at any point within that distance it must be in a state for instant work. The weight of the engine, carriage and men, dependent on the average power of horse draft on London streets, had to be studied, and all these conditions combined : how perfectly this was done we know. In doing it, one thing is notable however that of those who started with the same data for construction but two or three arrived at a standard result.

Would it have been so impossible to do the same in the case of the fire we have to extinguish, though by other means ?

To have fixed say, the range wanted, then the weight of bullet which can be made to reach it with accuracy, then the number of such bullets which should be thrown into a given space in a given time at that range, and having limited the weights by considerations, which scientific soldiers must always know better than mechanics, left the rest to the inventors, and had bases similar to the height and capacity of the Fire Engine proof-cistern, and the working of its machinery on which to found our conclusions.

Whether or not such calculations would have been easy in the present case, I cannot tell, but of one thing I am certain, that whether into the consideration of military contrivances, or the conduct of large armies, hard, practical, close, business-like calculations must enter increasingly every day, and that whether we carry or expend our men or our metal, an *economical* (and therefore at times a lavish) expenditure of the one or the other, will become a more valuable element in success. Our Ruperts and Murats will always find a place for their élan and valour, but it must be put forth or withheld by the rigid calculations of a Moltke.

Both England and India remember a campaign in which *shrewd calculation* and *well regulated audacity* led to a success which under no other circumstances would have been possible. Its history is quoted by foreign officers throughout Europe as a happy instance of what may be effected by their combination.

From no calculation whatever having been made in the present instance, much confusion has arisen, every machine gun has been classed, alike by inventor and judge, as a *Mitrailleur*, whether it deserved the title or not, and consequently, the true place of the weapon, has been confused or lost sight of, and this mainly in the following manner; heavy weapons doing duties that ought to be done by light field guns, or at all events trenching too closely on their range and position, were brought into competition with them as mitrailleurs, and so, because one species of machine gun is capable by range and weight, of entering the province of artillery, it has come to be argued, not quite logically perhaps; that *all* machine guns, should by right enter it also.

Were these heavy weapons of nine cwt. *true* Mitrailleurs, it would be difficult to controvert this position, but they are not so, for the true Mitrailleur is in all its forms only an assemblage of rifle barrels of the Infantry type, it carries a similar cartridge and drives the same bullet to the longest possible infantry ranges, it no more becomes a Field piece, because carried on wheels and drawn by horses, than does a baggage wagon or an ambulance.

Until then, it be proved that none but an artillery-man has the skill to drive any wheeled carriage when under fire, nor the *sang froid* to turn a handle, or take an aim under the same circumstances, it is not

easy to understand how the Mitrailleur and the gun can be classed together as weapons, or why we should use the same highly trained and expensive *personnel* for their service.

It is no more the fault of the Artillery-man than it is that of the Cavalry or Infantry soldier that there will always exist in war positions in which he would be uselessly, or what in these days is nearly as bad, *uneconomically* employed, that is, where his life or his ammunition would be unprofitably squandered.

We do not habitually employ the Nasmyth hammer to crack our nuts, though we all know how admirably it could do so.

It is, because neither of the arms by itself can perform all that has to be done in the field, that we use the three, and that such discrimination in the parts assigned to each in their combined employment is necessary.

In like manner because we now find that neither artillery nor infantry fire, can either separately or when used together, at all ranges, accomplish *all* that is possible to be done, Mitrailleurs are brought forward to fill the space existing between them, and in what manner this space does exist, I will presently explain.

So long as artillery consisted of huge pieces, immoveably stationed in strong places, or painfully dragged up by vast labour for their reduction ; their management and their projectiles were simple enough, the latter, at first stone, then iron shot, then perhaps a rude shell, and always somewhere near, a sack of flint stones, bullets, half pence, or old iron, it little mattered which, for the special benefit of a forlorn hope, or a sortie when at close quarters.

But as matters progressed, and light guns were more and more mobilized and separated from those of siege and position, while the necessity for a scattering charge of small shot still remained, or was rather increased indeed, by the guns being habitually brought closer to the troops in the field, their number and effects were decreased by the decreased weight and calibre of the guns themselves, and this would only be in part remedied by careful arrangement and packing of the grape and cannister, and the most rapid service of the guns possible to obtain.

Presently came the invention of shrapnell and serious difficulties of a new kind were at once introduced into the service of the Field gun, difficulties, many of which I may safely say, even now, lie thick in the path of every practical artilleryman.

For this same *Shrapnell* Shrapnell, *Boxer* Shrapnell, *Segment Shell*, or whatever form it may take, requires a Fuze. A Fuze requires adjustment, and adjustment requires correct knowledge of distance with great coolness and nicety of manipulation, and all this chiefly at those very times, when they are, to the best trained and bravest men, the most difficult of attainment.

Nor is this *all*, for it is more than hinted, that under differences of barometric pressure however caused, similar Fuses WILL burn out in some fraction of a second less or greater than the time for which they were calculated and adjusted.

Again the Fuzes of the British service suffer from every variety of climate, from sea and land transport, and above all frequently from over long keeping, and unforeseen errors are too often introduced by these causes. The use of rifled guns has not by any means remedied the evil, as of course the high and maintained velocity of their shells, will magnify any error in fuze performance however introduced.

Indeed, these considerations and the experiments which have led to them, have deterred many scientific artillerymen from advocating the use of the time fuze at all, and amongst several nations they are but little in favour, even in their present improved condition.

For if we consider for a moment this diagram, No. 1, which represents fairly enough the way in which shrapnell fire acts, we shall the more readily appreciate what Fuze errors really mean in such practice, and the necessity of the elaborate and expensive education bestowed on the artillery man in order that he may avoid as much as possible having too large a *personal* share in them.

Let us, for instance, suppose C to be the gun, A to be a line occupied by the enemy, and B a line parallel to A, distant from it say by 60 yards. The artillery man in order to produce his best effect with a shrapnell desires to burst it 60 yards in front of A, a thousand yards off—he misjudges his distance by 60 yards and he knocks over say one man, his shrapnell acting as a solid shot.

Again his shrapnell is travelling some 360 yards a second at that distance. His *tenths* don't quite correspond, his fuze burns a little slowly, and the 60 yards is somehow lost with the same effect—or a wrong tenth is selected perhaps, and by the difference between the 6th and the 10th of a second the effect of the shrapnell is either way less than it should be.

In fact, the effect of the shrapnell is always in proportion to the distance of the burst from the object, there is but one distance to be maintained between the two, for a maximum effect, and what between the want of absolute certainty of either one or the other, the want of absolute accuracy of fuze performance and of fuze adjustment, it so happens that this is not *exactly* hit upon once in a hundred times even at fixed objects.

Can we then be surprised to find that even on such objects not one half of the powder and metal carried and expended is in such practice effective, and that as a corollary we therefore must provide, and move, whether in guns, carriages, or ammunition, more than double the weight necessary to do the work.

This state of affairs was so serious, that various plans have been devised to avoid it, and finally it has led to the introduction of the Mitrailleur, which has no such difficulties to contend with, for as it fires rifled projectiles, each independent of the other from the muzzle of the gun, it follows that its effects are, not as the distance of the burst from the object, but directly as that of the object from the gun. The cone of dispersion of its bullets moreover, is not interfered with by a charge of powder exploded among them after starting, but it depends solely on the mean deviations due to the barrels of which the gun is composed.

We need not wonder then that careful experiments should have proved that this weapon has greater effect on targets, at the ranges at which it is fired than the field gun. A glance at diagram No. 2 will shew how comparatively little, miscalculations of distance, within reasonable limits, will influence the amount of the work performed. Of what nature this is, will be best understood from diagrams 3 and 4, which exhibit the targets actually made by the Montigny, and Gatling Mitrailleurs at 600 yards in the Shoeburyness experiments, effects which would have been equally exhibited on a field of battle against a line of living men.

These effects, be it remembered, were not produced by batteries of these arms, but by a single specimen of each, and represent about three minutes firing: a battery of six guns of either type, would therefore have done the same work in about half a minute, or in three minutes' time, distributed this hailstorm of fire, impartially, along a line of six times the length. Always supposing this line to have exposed, be it remembered, and within Mitrailleur distance, for neither Shrapnell, Mitrailleur, nor Infantry rifle bullets, will penetrate any but the slightest defences, or serve to dislodge an enemy, carefully entrenched.

In the latter case the guns at once become again superior, and field cover of whatever nature is sooner or later shaken, torn to pieces, or blown into the air, by the weight and power of their fire.

Still, if it be considered how often an enemy must of necessity expose himself, and that some two mitrailleurs with their ammunition will weigh no more than a single field gun, that they can be transported at the same cost, and worked for as little money, the economy of their use will be at once perceived, even should that use be but an occasional one.

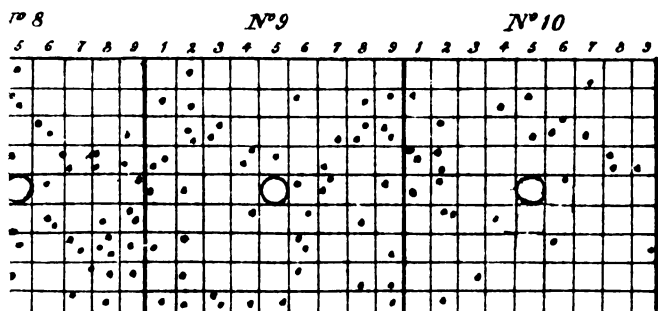
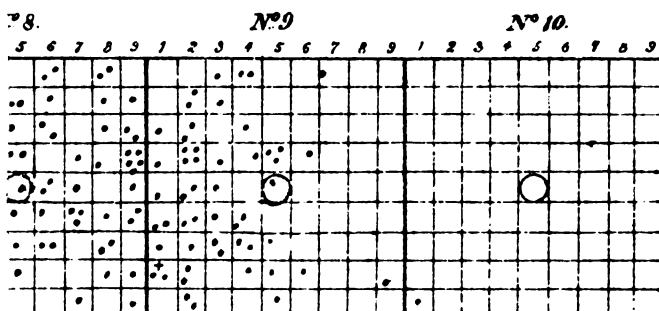
General Adye in minuting on the Shoeburyness Committee Reports, observes that Mitrailleurs do one duty of the Field gun very well, and the others, not at all. This is most assuredly true, but then that duty, the duty namely of dealing purely with the lives of an exposed enemy, is one of the commonest required of them, and is shewn to be better done within Mitrailleur limits.

At the commencement of this lecture, I alluded to a *space* which the Mitrailleur might be expected to fill in war, and here I think, I should



|                 |                                        |                        |      |
|-----------------|----------------------------------------|------------------------|------|
|                 | 1200                                   |                        | 2400 |
| <i>Infantry</i> | <i>Artillery</i>                       |                        |      |
| <i>illery</i>   | <i>Mitrailleuse</i><br><i>Infantry</i> | <i>Slight effects.</i> |      |
|                 |                                        |                        |      |
|                 |                                        |                        |      |
|                 |                                        |                        |      |
|                 |                                        |                        |      |
|                 |                                        |                        |      |
|                 |                                        |                        |      |
|                 |                                        |                        |      |

{ *Infantry*  
 { *Mitrailleuse*  
 { *Artillery*





explain what I intended by the term. I have endeavoured to shew you that the gun cannot do all that is possible to be done in the way of destroying life *economically* at all distances, the failure of the efforts to make it do so, and how the Mitrailleur can supply the deficiency.

By applying a similar process to the results of Infantry fire, we may possibly discover that there exists between the line of its greatest power and the line on which artillery would bear with most force, such an interval as that of which I speak. No imaginary space, be it understood, but a distinct measurable area on which Mitrailleurs being brought to bear would render the most valuable support and assistance both to the one and the other.

This, supposing for the sake of argument, that Mitrailleurs, Infantry, and Artillery, could be aligned on the first yard of a field of battle would in my opinion, occupy the distance between the six hundredth and twelve hundredth yards from their front, and render an advance over that space more dangerous than would any other species of fire with which we are acquainted.

That the importance of this particular space is great, will I think be conceded by all practical soldiers.

My reasons for assigning it to the special care of the Mitrailleur are as follows :—

Those who have had most to do with the instruction of the soldier in musketry, while insisting strongly on his being furnished with the most rapid, accurate, and far-reaching weapon to be obtained, which will not only make him a formidable antagonist, at the longest ranges, but also singly dangerous to a number of enemies at close quarters, know well, that his fire when delivered by lines, is more specially dangerous up to about 600 yards though still severely felt at 1,200, and beyond it.

On the other hand, the artillery officer would open fire with deadly effect on masses of troops in position, or advancing, at a distance of 2,500 or 3,000 yards, and at 2,000 yards force them either to seek cover, or modify their formations.

As the attack progressed, and supports and reserves in turn, came within his range, could he only be assured that the first line would be at once taken in hand by another description of arm, he would do his utmost to pound and disorganise them in their turn; retaining as much as possible his already ascertained ranges and fuze adjustment—so difficult, as already shewn to change successfully and rapidly for continually altering distances, and maintain as long as possible the highest powers of his batteries.

Directing thus his fire on each successive body of the enemy as it appeared, and perhaps plying them with shrapnell and shell at four or five different distances, and points of advance, rigidly adhered to, and

covered by different guns or batteries; he would then allow them to pass more and more demoralized and shaken, into the zone of mitrailleur fire, through which, if they persevered, they would reach that of the Infantry. Each arm meeting them at its best as they neared the defensive position, of which alone, for the sake of argument, I am now speaking.

In some such manner (I speak diffidently) might the field gun, Mitrailleur and breachloader be made to act harmoniously together.

The artillery as first, first meet at its strongest, and leave at its weakest point the enemy's advance. The mitrailleur act where its power would be best applied; finally our men, with fall pouches, strength, steadiness, and nerve, carefully reserved, until the foe came within their most fatal distance would open such a fire as they could so deliver, and turning the defence into attack deal with the enemy as they please.

I do not think that any enemy in any but the most overwhelming numbers would succeed in a front attack against a line fairly posted, and whose fire was organised to oppose his advance under some such conditions, and with such weapons as these.

We must in such a case be wonderfully out-manceuvred or five fold out numbered, should we be compelled to change our ground.

Nor is it in defensive positions alone that mitrailleurs could be used with destructive effect so that they be also used with skill and judgment, but it will be easily understood that to expose them to the concentrated fire of a numerous artillery, or bring them up to within 300 yards of thick cover filled with an enemy's riflemen as was done more than once by the French at the commencement of the late war, would be to shew neither of these qualities, but the contrary.

An instrument, which while offering a fair mark to artillery, is also of more limited range, will require even greater care than the latter in the selection of its true positions, and we must attribute to its just cause any disappointment expressed regarding weapons of which exaggerated or impossible performances were expected beforehand, or whose scientific employment was misunderstood or neglected, perhaps on this very account.

We have all heard of several instances in which such mistakes were made, but no impartial and intelligent mind will fail to distinguish between the value of a warlike invention when applied to its true uses, and its failure to effect objects for which it was never originally intended.

Then when we hear of mitrailleu batteries crushed on one occasion by infantry fire, at a range of 300 yards, and at another dismounted, by the converging fire of rifled field pieces, we should at once say, that in both instances much want of judgment was displayed in the placing and the use of them. On the other hand, when we learn that the Prussian guard advancing in deep formations in the face of their fire and that of

Infantry in the attack on St. Privat, lost in ten minutes 6,000 men, and that compelled perforce to retire, they only made good their advance on the position, after more than an hour employed in re-formation, and after the French flank had been turned by the Saxon troops, we at once perceive their appropriate use and true value.

Here also I would remark that although the German artillery in the former instance, it is true, dismounted and silenced the mitrailleuse batteries, yet this was only done by concentrating the fire of a large number of guns on each single mitrailleuse successively, thus while so employed, they were diverted from their proper function, and therefore this feat (successful as it was) is by no means the argument which some have assumed it to be against the mitrailleuse, but rather tells the other way.

Finally, that notwithstanding all that was said at the commencement of the war, and the Prussian opinion communicated to M. Montigny, a mitrailleuse inventor, "*que pour la guerre de campagne les mitrailleuses n'avaient pas d'avenir sérieux*," these weapons gradually fell into their proper places, made themselves so severely felt, and caused such terrible losses to their opponents, that they have been finally adopted by Germany, as well as by several of those military powers who keenly watched the issues of that contest, and have now practice, as well as theory, to guide them in their decisions.

In arguing against the employment of mitrailleurs it has been urged that we have already too many wheeled carriages with our troops and that any addition to their number would but hamper their movements without any corresponding advantage. So good an authority as Colonel Hamley is quoted as laying down the proposition that the proportion of  $\frac{2}{3}$  guns per 1,000 men should as a rule not be exceeded in the field.

But curiously enough he adds, that this is more than ever true now that the mobility of artillery has been increased, and its sweep of the horizon widened.

Surely, this argument should also tell the other way, for if artillery is now more mobile than formerly, it must be more easy to transport it in larger numbers, and if again, its sweep of the horizon is widened in order to produce equal effects on both, the larger circle must be commanded by more guns, than were needed for the smaller.

Again it has been said that the French troops who had been taught to expect marvellous things from their mitrailleurs, and depend too much on their support, became discouraged and more easily beaten when they were found to do less than was expected, and that the same would be the case with the troops of other powers who should adopt them.

To this, I think the fair answer would be, that the fault lay, not in the instruments themselves, but with those who had the folly to teach their infantry to rely for success on anything whatever beyond their own

skill, strength, and courage. We, at least I trust, had we any number of mitrailleurs, would never cease to inculcate the old lessons, which have made our men what they are, happy enough to possess the most powerful auxiliaries of whatever kind, but ready to go any where, and do anything without them.

You will doubtless observe that in the order of this lecture I have departed from the usual method of describing some plan or invention, and afterwards proving its uses and applications, and I have done so for the following reasons. In the first place, the term mitrailleur, is but a generic name for a variety of contrivances, and in the second, I could hardly expect to interest a scientific military audience by a dry description of locks and barrels, levers and springs, unless I had in a measure, first explained the reasons for which they were put together, and in a measure, the part they might be expected to play.

I will now, if you please, sketch in outline the mitrailleurs as they exist at present, and conclude by shewing why I believe that they would find a special place in India.

They may I think be divided into two great classes, one of which would be represented by such as more closely approximate in principle to the Breech loading rifle, the other to the Revolver. Though this may at first sight seem a somewhat rough method of classification, I adopt it as it will convey what I mean, as well as any other, namely, that in the one case the necessary rapidity of fire, is gained by means of a large number of Barrels, fired comparatively slowly, in the other, by the more rapid supply of ammunition to a single barrel, or to a smaller number.

In the first class would stand the Vandenburg, Favchamps, Requa, French and Montigny Mitrailleurs.

In the second, the Agar, Gatling, Claxton, new Russian, and others.

M. Favchamps, a Belgian officer, was (putting aside such ancient devices as would make the Colt's pistol an invention 200 years old) probably the first who constructed a Mitrailleur capable of being fired, continuously and of having serious effects. I have seen his original gun, which is ingenious in construction and formed one item in his clever and extraordinary system for the defence of permanent fortification. It was a light piece, composed of many barrels arranged in a square, and contained in an iron case. It was loaded direct with needle cartridges from the cases in which these were carried, and the firing needles were released by the movement of what he called "the comb," a steel plate, formed with fingers which engaged them.

General Vandenburg again, loaded a mass of chambers with loose powder, had a wooden board full of bullets which he then inserted, screwed the block against a corresponding mass of barrels, and fired the gun, through the single vent which communicated with every chamber by radiating passages.

The Requa battery, of which some little use was made in the American war, consisted of a row of rifle barrels, fixed on a frame, and having a slight lateral movement to spread its fire, with its breech loading mechanism I am unacquainted, but it was, I believe one of the *feeble folk* among mitrailleurs, and undeserving of much attention.

To M. le Capitaine Favchamps, undoubtedly however belongs the credit of having first shewn the practicability of what the French on the one hand, and Montigny on the other, have done for this class of the weapon, and though the two mitrailleurs are somewhat different in constructive detail, they are in principle almost identical. I need not say *here* that in all these weapons one thing has made the entire difference between possible success and necessary failure, and that is, the invention of the modern metallic cartridge, and that without its use for any thing beyond a single act of assassination like Fieschi's, they could have had no place in war. The French mitrailleur of which we have heard so much had a mass of 25 rifled barrels arranged in a square, and these squares in external form were fixed into an iron box, round this again was cast a bronze envelope, something in the form of a light field gun—its moveable breech contained the locks, and was secured in its place by a cut screw, the favorite French breech-loading device. The cartridges were of brass and paper and were contained in a iron block, bored to correspond with the barrels and much like a huge revolver chamber, the arrangement for their ignition was simple, the bullets were heavy, and the bore of the barrels large, and as they used large charges of powder, the effects of the gun were felt at long range, indeed I have a letter from Mr. Mejanel, (a correspondent of the *Daily News* who witnessed several of the actions of the late war) in which he describes graphically the terrible gaps and lanes torn by them through the Prussian ranks when properly used. It appears however that, as I said before this was not always the case, and that if mitrailleurs are ever to be brought systematically into the field, their place and uses must be made a special subject of study as much as are those of any other arm. The Montigny is in construction very similar, though its 37 barrels are arranged in a hexagon and enclosed in a tube of wrought iron. The Photograph I have here, conveys an exact idea of its appearance.

The breech-block which contains the locks however, is made to advance and retreat by means of the jointed lever, here shewn and the cartridges instead of being carried in blocks, as the French are, project from a steel plate which sliding into grooves on the face of the breech-block, advances and retreats with it, withdrawing the empty shells, as soon as the discharge is effected.

This gun is capable of being fired at the rate of 12 discharges per minute—some used by General Ducrot in his celebrated sortie from Paris, discharged as many as 480 shots a piece in that time, but with it as well as with others the use of a purely metallic cartridge is absolutely necessary, for the following reason. If a soldier in loading

his rifle, finds his cartridge hard to enter, he feels his difficulty at once, throws it away, and takes another ; but when cartridges are being sent home by powerful machinery of whatever kind, the difficulty cannot be perceived by the operator, until the cartridge, perhaps a little deformed in transport, is smashed up altogether, and a jam occurs, when such a cartridge is, as in the case of this gun, one out of 37, such a jam involves the delay of the other 36, and in all mitrailleurs of whatever nature involves waste of time and labour. Now, as it is mainly to the saving of time, in the operation of discharging cartridges, that mitrailleurs owe the greater part of their value, it follows that the form of cartridge, least liable to such accidents should accompany them, and that such a cartridge is the drawn metal one, I think will not be denied.

It is true that much stress has been laid on the advantage to be derived from having but one cartridge for both Infantry and mitrailleurs, but this may prove specially with ourselves to be more than counter balanced by other considerations. It is all but certain that whatever form of these weapons becomes eventually the arm of the country, it will be found impossible to use with it, any but the metallic cartridge.

The Agar gun, of which I spoke as belonging to the second class of mitrailleurs, is a strange looking weapon consisting of a single barrel mounted on a ball and socket joint, and by ingenious mechanism fed with steel cylinders, each containing a cartridge, a small steel plate protects the firer, and the locks are clever, but in practice it becomes heated to such an extent, as to prevent its general adoption.

The Claxton, is another weapon, simple enough in construction, and easily worked in slow firing, by means of a reciprocating handle, but is incapable of giving that rapidity of fire which could alone justify the use of a new nature of arm.

The Gatling gun, of which I believe the new Russian mitrailleur to be only a clever modification, stands by far the highest in its class, it consists of 10 barrels revolving on a central axis, each furnished with its own lock, moving to and fro in a species of groove or carrier which revolves with it.

The carrier, locks and barrels revolve together driven by a handle placed at the side of the gun. As each groove comes under the opening, through which the cartridges are fed, the carrier receives one, the lock then, the rear of which bears on a cam, begins to advance, pushing the cartridge before it ; a second cam at the same time, commencing, to act on its spring and striker ; when the highest part of the cam is reached, and the lock is therefore fully home the trigger so to speak also reaches a step in its own cam, and falling over it, discharges the cartridge as the barrel moves on a lug on the lock moving in a spiral groove, commences to withdraw it, and it retreats, carrying with it the cartridge, which being finally released is dropped on the ground, by this contrivance which is a very ingenious one, 5 locks are in different stages of advance



towards their barrels, and 5 retiring from them (having done their duty), at any one instant of time.

The rate of fire is about 300 rounds per minute, and a clever feed apparatus has been fitted to the gun since I saw it, which has added greatly to its powers.

Diagram 1, shews its effects at 600 yards, and I need say no more about it, except that being furnished with a shield, the men working it, are protected from musketry, and that having an automatic reciprocating movement on its pivot, it distributes its fire laterally, through small arcs without the necessity of relaying.

Such then are the principal forms of mitrailleurs with which I am acquainted, but as there were 16 other new inventions brought forward at the mitrailleuse competition in England, there is evidently no intention that these should remain alone in the field, nor perhaps as the almost invariable answer of the committee to their projectors was, that they saw no reason for giving the slightest encouragement to Messrs. Dash and Blank, is there much reason why we should just at present concern ourselves greatly in the matter.

One unhappy man, the inventor of the volcanic gun was however I think very hardly treated, he had devised a machine divided by a partition, and having a barrel screwed to it. One half was to be filled with rocket composition and the other with bullets and this was to spit fire and lead for a lengthened period.

The committee would not even give it a trial, and though one rather agrees with them in their regard for their personal safety, one cannot help feeling for the poor man's disappointment at the failure of such an effort of genius. There is one other invention regarding which I much regret being unable to give you any definite information, as its announcement seems so very promising ; it is a French one, termed, if I remember rightly " La Faucheuse." The account of it says that it operates without noise, smoke or fire, throws 3,500 bullets a minute to a distance of 600 yards, and costs 35 Francs, all ready for action. If true, what a blessing to humanity. On these terms any subaltern might declare war on his own account against the rest of mankind whenever he pleased, and feel the expense of their extermination as little as his average mess bills.

If now we pass again from the arms themselves to a slight analysis of the foregone arguments regarding them, it will I think be seen, why I should consider them to have a special place in India. First, would be their extreme lightness and facility of transport, whether by road, by rail or by cross country marching.

Then the nature of their ammunition which the new factories in this country could turn out in any quantity, and which is so easily

arranged and re-arranged for any species of carriage from a railway wagon to a coolie. Then again their cheapness in use, if only we be not persuaded to organize, man and equip them as horse artillery batteries, but leaving them in their intermediate place, educate a separate class of men for their service, taking for instance their drivers from the cavalry and gunners from amongst infantry marksmen.

Thirdly, their effect as compared with anything that can be expected to be opposed to them, whether in the way of weapons, or tactics.

In European warfare, as we have seen, the most dangerous enemy of the mitrailleuse is the rifled gun, which placing itself at such a distance as to avoid all danger to the men working it, would, in a duel between itself and the mitrailleuse, sooner or later inevitably destroy it.

Again in Europe, troops would be so distributed in the face of an enemy known to possess mitrailleurs as to offer the loosest and most indistinct targets to their fire, creeping across exposed places by twos and threes, they would form groups or companies behind every available cover, and repeating these tactics at each fresh advance, only compact themselves for their rush on the position, and final trial of strength. But here in India the conditions thus slightly indicated do not exist, there are probably not 50 rifled guns between the Himalayas and Cape Comorin, in other hands than our own, though smooth bores there are we know in plenty and of all sizes ; to the latter however, no one would hesitate to oppose his mitrailleurs, confident that under such a fire, no Asiatics would stand to their guns, and that they must be almost immediately silenced.

A smooth bore native field battery, could not reply, for five minutes to mitrailleurs skilfully used, nor would the guns be ever taken off the field.

Again no native force possesses more than a small proportion of long range rifles, and few are better than mobs of more or less well armed men, doubtless individually brave and formidable antagonists, but to a highly disciplined force, only so, owing to their great numerical superiority. It is the Asiatic reliance on the efficiency of mere numbers however that would always present to us the very targets that mitrailleurs most successfully dispose of.

Or let us for a moment look at a contingency, of which we have for years heard so much and seen so little, as a real possibility, the rising of the evil disposed of some populous and turbulent city on a small number of English residents, doubtful perhaps of the fidelity of their native mercenary protectors, what an antidote to the panics which have periodically disturbed so many minds, would be our possession of weapons, which, sheltered in some defensible treasury or cutchery, turned by the hands of old women, supplied with cartridges by children, and directed by the intelligence of some keen eyed rifleman, would grind out deaths 300 a minute

on the canaille who dared to affront them. How good for the canaille too, to know they were there!

Indeed I but lately received a note from an artillery general officer, whom you would all acknowledge, were I to name him, as amongst the first in India, advocating the stationing of mitrailleur batteries in the neighbourhood of all large Indian cities.

Or take them into the hills, and what would be the surprise and discomfiture of men who pride themselves on their shooting, at being brought face to face with a light portable weapon, which not only shoots further and straighter than they can do, but also three or four hundred times as fast, and would mow down one of their gatherings for assault, as a reaper mows ripe grain.

Again for use in isolated frontier posts necessarily confided to small garrisons and unliable to be assailed by artillery the mitrailleur would appear to be the very weapon above all suited, the garrison say has been weakened by the absence of patrols, by wounds or by sickness, and still with a mitrailleur a dozen men could make good the post against a thousand.

It may seem idle to speak of their moral effects ; and yet these, however caused, have in this country, oftendone as much for us, as the sword which produced them. Even on this ground then, a weapon that would convey the idea that the angel of death was in our camps and quarters, and fought *for*, and not *against* us, would be worth having if it did no more, this the mitrailleur would certainly do with an Asiatic enemy to whom it was unknown, or by whom its effects had not been considered.

I should perhaps have said something regarding my own inventions connected with these guns, a carriage on which they could be worked in the plains, as I think more successfully than at present, and a slide for mountain carriage and mountain service, but I find I have already trespassed too far on the time allowed me, and I fear also on your patience.

I have purposely avoided allusion to the controversy on the respective merits of rival inventions, partly because this also might have been thought to be with me in a measure a personal question, and partly because, should we only obtain the best invention, whichever it may be, and use it appropriately and economically, my desires will have been fully gratified.

In conclusion, permit me to make one or two remarks, and to beg that in making them, I may not be misunderstood.

Mitrailleurs are essentially labour and life-saving machines, enabling a few men to do the work of a greater number, and better also than the greater number. They will do certain Infantry work better than Infantry. And certain artillery work better than the artillery themselves.

But they occupy an intermediate place between the two, formerly less effectively filled by either the one or the other, and should be introduced. neither as Artillery nor Infantry weapons, but as a class *à part* to assist both, but interfere with neither. We must not try to fight by mechanics, but rather multiply our strength by them, that is to say we could not afford to spare a single gun, nor a single Infantry soldier, did we have the supposed mechanical equivalent of 10,000, in mitrailleurs, and yet, mitrailleurs we must have : for until we hold in our hands the Vrill-staff of that clever story, " the Coming Race " and can annihilate our enemies by pointing it at them and wishing them dead ; small people like ourselves, who are determined to rule, and not be ruled by others, must not cease to compensate by *mechanical means* not for want of strength or courage, these we have, but for sheer numerical inferiority which unfortunately we have also.

For this reason we cannot afford to *give points* to any one as it is, but mere want of activity in such matters as these gives them.

We have all seen a sturdy insect carried off captive, and presently devoured by ants ; and was not the great Gulliver himself, pegged down, and made to pay a War Indemnity, by Pigmies in Lilliput ?

Should we neglect these and such like means of multiplying our strength, the day may come when the contemptuous stranger will pass us by wagging his head and saying,

*" Mutato nomine de te fabula narratur."*

## II.

## THE TACTICAL FRONT OF MODERN ATTACK.

THE influence of modern fire arms on the tactics pursued in the present day has caused a complete revolution, if not absolutely in the formations preparatory to combat, at least in those of attack. The science of details regulating the march of armies, and the construction of the different fractions into which they are subdivided, with a view to taking up a position, on one or more lines, continues unmodified except in one essential point. The order of battle must be taken at such a distance from the enemy, that the combinations for attack may develop themselves to *meet* his fire, and not to *suffer passively under its effect* while forming them. Our great authority "Jomini," remarks: "The best mode to employ for constraining a hostile line, to quit its position, is difficult to determine in an absolute manner. Every order of battle or of formation which could combine the advantages of fire with those of the impulsion of attack and the moral effect it produces, would be a perfect order. A skilful mixture of deployed lines and columns, acting alternately according to circumstances, will ever be a good system. As regards its application the "coup d'oeil" of the commander, the "moral" of the officers and soldiers, *their instruction in all kinds of manœuvres and fires, their knowledge of the localities and the nature of the ground*, will always have a great influence upon eventualities which may present themselves during the combat."

These are old lessons. It is their practical application which has been forgotten or neglected, and not new systems which have been devised. But old and true as the principles are and always will be, they are subject to modifications, and to overlook the fact, when necessity arises, is an evil next in degree to losing all memory of principles themselves.

The influence which to-day constrains one to seek a modification in the formation of attack is the all important one of the precision and range of modern fire arms and artillery. Attacks made on a small front in deep and close formation are well nigh impossible against Infantry under the protection of shelter trenches or any other cover. However small the advancing columns, the development of fire poured upon them has, in actual conflict, imposed ;

I. The use of yet smaller columns within effective range.

II. The instinctive and unavoidable spreading out of the latter in actual collision with the enemy into dense and unswayable Tirailleur Lines.

Nothing can be more true, than that the great desideratum in the British Service should be "a flexible chain" instead of a "bar of iron,"

and with this sound maxim it has been urged by accomplished officers, that, from the experience of recent wars, the half-battalion columns of the Prussian formation, should be substituted for the formation in line, the old inflexible bar of iron.

At any rate, it is quite impossible to exaggerate the importance of the change, or the impressive urgency of the subject in connection with our system of tactics in the attack.

In considering the question, we admit that a change is necessary; the next point is to decide when and where to apply it, without encroaching on and upsetting a convenient and well-ordained system. Where is the pruning knife to be applied without doing mischief? This point it will be endeavoured to make clear. The tactical point of departure, now as before, which one has to start from for purposes of ulterior action, is that of the Order of Battle, "In line of Columns at Interval," or in "Line Deployed." The principal modification is that it should be taken *while yet out of range*. For defensive positions, the formation on two ranks of the front line should, as a rule, be retained, and the proper spacing is taken up according to the features of the ground and with power of return to the offensive. For the attack the problem has yet to be solved.

The British line though affording a considerable development of fire, is no longer suited to the exigencies of the present day, *viz*: requiring mobility, cover, celerity and concentration of fire. The long thin line is unwieldy in an advance, and becomes a perfect target for the concentrated fire of the enemy's shots, whose smaller columns play round such a line like sharks round a whale, and it is, therefore, necessary to reduce this unwieldiness. This it has been proposed to do by the substitution of half-battalion columns with power of easy deployment. Such half battalion columns in our service, would correspond to the company columns of the German Armies on the Prussian model. A Prussian Battalion on the war footing being equal to 18 officers and 526 men, plus 500 men on mobilization; Total 1,000 effectives.

Now, a British battalion in India, can hardly in ordinary times and all deductions made, exceed 600 rank and file. It would take, therefore, nearly two British battalions to represent a Prussian battalion.

Admitting the undoubted advantages of the half-battalion and company columns, with due regard to their handiness and mobility, the partisans for their introduction and adoption, overlook the fact, that the tactical front of an English first line must be shorter than that of the Prussian line, with an equal number of battalions, by the excess of effectives in the latter. It may be, that the fronts of a Prussian and a British brigade at starting are equal, but on an advance the third or tirailleur rank comes into play in the former, and should the British brigade interpose skirmishers between its columns, it can only do so by drawing on the front line.

The remedy would be to increase the number of battalions in the front line of a British brigade to suit the occasion ; but this would be difficult if it is to be done at a sacrifice and weakening of the whole tactical structure. We must work with the tools in our hands, for the describable formations depend on an organization which we do not yet possess. In other words, we must employ small units and make them answer the purpose of larger ones, trusting in any event of England's being involved in a European war, to an increase of effectives in the battalion, the ideal unit of 1,000 men may then become a reality. At present, it is not with the strength of our battalions that we have to deal, but with their handling and direction, and also the handling and direction of their fractions ; applying rules which will suit them in every case, and which under all circumstances will favour and adapt themselves to high or low effectives.

The real question, however, is not so much the adoption of the Prussian system as the early abandonment of a dangerous and defective formation with the substitution of something better, whatever that better may be, and brought about on the existing organization.

Are we to retain a formation, which, besides being unwieldy, is utterly impossible, without the certainty of incalculable losses ?

It is proposed to adopt the half-battalion columns, to correspond with the Prussian company columns so far as effectives are concerned. But will not this concession equally bind us to sacrifice the tactical exigencies of front, unless we are to draw on our second line and later on our reserve, to make up its deficiency ! This could not be, and starting from the basis that, *pari-passu*, we give to the companies in British battalions a value which they do not possess in effectives, but which they represent, and which in the event of war might be realised, we seek for a solution without sacrificing accepted and convenient tactical truths or orders. This solution would be difficult and extremely perplexing in our investigation, were we to accept the Prussian arrangement as the *dernier môt* on the mode of attack. Has their system of attacking in half-battalion and company columns been consecrated by unvarying success ?

Has it been irrevocably accepted as the best mode, under heavy fire of artillery and breech-loading weapons, for ensuring unity of action and facilitating timely deployment, without heavy losses, under circumstances of increasing difficulty ; such as preserving a close formation, until the very instant a deployment becomes necessary to deliver volleys or a withering skirmishing fire. The adoption of these column formations implies deployment at sometime or other, on some undefined point. This point cannot be under the enemy's rifles, for however steady troops may be, and under proper control, the operation is a delicate one.

The mobility of the small columns, connected by skirmishers, gives them an advantage in the way of liberty, at all times, to select offensive and defensive cover, but on the other hand, the ground must be unex-

ceptionally favourable, to allow them to screen themselves, without becoming disconnected, or in seeking its protection, losing time which might be better employed in inflicting losses on the enemy.

It is only exceptionally that, in this formation German troops have been able to deploy, and the popular impression left on the minds of military students of the late campaigns is—

I. That in all the instances in which the small columns attacked, they soon, on entering the enemy's line of fire, resolved themselves into heavy and thick lines of sharpshooters.

II. That the enemy's high trajectories, especially in the case of the French troops firing from the hip, allowed the small columns to march with impunity until almost within point blank range. Hence, troops in such a formation could only suffer on entering and leaving the boundaries of the belt or zone of fire.

If one cannot pin one's faith implicitly on these columns, they have incontestable points of merit; and first of all, is to be observed the constant initiative and independence left to subordinate officers; secondly, the intelligent direction and supervision which they exercise to the last practicable moment; the excellence and trustworthiness of the officers themselves and their thorough qualifications to fulfil any mission based on their knowledge of ground.

Some of the above considerations are due to the order originally assumed when starting to attack, for the fractions at once isolate themselves from the mass, and establishing themselves as distinct bodies, they preserve their individuality of action unrestrained until the last. Unfortunately, this last is not always where the enemy is defeated, but when he compels the columns, in order to seek protection from a heavy fire, to melt into a dense and disorderly tirailleur line affording a desultory fire, perhaps, in truth at times more noisy than dangerous.

A glance at the above remarks suggests the following conclusions—

I. That the attack in company and half-battalion columns is good, in advancing and up to a certain distance towards the enemy.

II. That after a certain limit the formation is too close, while regular deployment becomes difficult and dangerous.

*N.B.*—Exceptionally, company and half-battalion columns may be used to close on the enemy. It is only necessary to judge where the circumstances are appropriate.

III. That the impossibility of a deployment under fire without heavy losses compels troops to form a confused line of tirailleurs escaping all regular supervision. Such an occurrence may defy criticism after a success, but should a reverse be experienced, no rout would be more complete or without remedy.



IV. Consequently that the passage from columns to the loose and uncontrolled tirailleur line should be brought under a few simple and regular rules.

#### MODIFICATION ON THE MODE OF ATTACK.

(a.) The British soldier should be trained and instructed to become a thorough rifleman. That he is proverbially a bad skirmisher, unintelligent on out-post, is the consequence of the absence of any system of tuition in battalions on this point, with a universal indifference.

This training should be carried out practically and theoretically by company officers, who by this means will be also grounding and forming themselves insensibly as efficient officers, whose success would be assured by the more or less favourable reports made on them.

(b.) Together with the above training there should occur constant Battalion Field practice, Advanced and Rear Guards and Out-post duties, under the commanding officer. This should include the attack and defence of small positions, the military value of which should be thoroughly understood and explained.

The mind of the British soldier is ready to receive impressions, and if it can grasp the more abstruse principles of the theory of musketry, there is every hope that such additional instruction may, not in vain supplement useless parades and drills.

Let equal recognition of those who excel and incentives to do so be inaugurated, as already exists for the good shot, and the result would be marvellous.

To become a good sharp-shooter in the sense required, a soldier should be a fair shot, a fair gymnast, a good judge of distance, and of the value of ground and cover. He should be clean, smart, alert on sentry and piquet, perfectly acquainted with his part in the theory and practice of out-post duties as well as of those appertaining to the camp and to advanced and rear guards.

Much importance is attached to the existence of good marksmen in a corps, but such men, as soldiers, are only distinguished by one point of excellence, and may fail in all the other attributes; while shooting at a mark, is different to the shooting which enables one to aim correctly while being shot at.

Is it to be believed that the British infantry officer is not equal to this task of revival in his company, in his battalion? This is not to be maintained. The faculties, the abilities are only lying dormant. Once evoked with his other qualities of the true man of war, one may go far to find his equal.

(c.) Battalions of infantry should be trained to advance from line or quarter column as the point of departure, in half-battalion columns

(however small the principle is the same), say for 1,000 paces. (See Diagram A, Fig. 1).

From half-battalion columns the troops should advance for another 1,000 paces in company columns. (Fig. 2).

*N.B.*—The means of converting one class of columns to the other should offer no difficulty.

From company columns to close the remaining 500 paces, which separate from the enemy, the company columns should open out from the rear companies, which, under all circumstances will act as support to their leading ones. (Fig. 3). The skirmishers, taken from the flank companies, have from the first interposed themselves between the small columns. When the company columns have divided into advance and support, they continue to move in the intervals of the first line of companies.

In such an advance from the front line of a brigade, the brigade in order of battle, being the point of departure, say at a distance of at the least 2,500 paces from the enemy, the different transformations as described above would take place in each battalion of the front line (See Diagram B.) Let us designate the point of departure as the first position. The second position would be the formation of half-battalion columns. The third that of the company columns. Finally, the fourth position the line of skirmishers, companies and supports.

Now on the front line assuming the second position, if there are three battalions in first line for instance, that of direction should be the centre one. But whether there are two or more battalions in first line, the interval of 30 paces should be trebled or quadrupled as found necessary. If the battalions were suddenly deployed when in second position the separating intervals would be in the above cases, either 90 paces or 120.

On reaching the third position a further extension would take place in the advance, and were the additional interval of 30 or 60 paces added, the battalion would again, if deployed, display intervals of 120 or 180 paces.

This interval when carried to interval of deployment, in the third position would with the effectives in front line of the order of battle as shewn in Diagram B, allow 1 pace and 10 inches to each file. Should even such interval be insufficient it can be doubled. To exceed it by much would cause disconnection of units, for battalions though broken up, must act as part of the brigade, and though spacing is desirable it must be under certain limits.

The reason for this expansion or spacing in the line of attack should be made apparent. In treating of it, one hears much of late, of the front required under present conditions of fire, and some military





writers consider the vague term of 3, 4 or 5 paces per man as a not exaggerated unit of expansion. This, if applied to a battalion or brigade implies dislocation of parts; and a limit to expansion should exist, if unity of action, impulsion, and concerted firing power have any importance.

In the old instructions, consistent with the range of the old musket and smooth bore cannon, the rule that about 2,000 men should occupy a mile of front might not be rejected, as short of proper spacing. The losses experienced in late campaigns, result from the non-observance of it, rather than from its insufficiency. The rule gives 176 paces per file, and this should be, only exceptionally, departed from as a maximum on the point of collision. One does not wonder at the losses complained of, when it is well known, that, in spite of rifled arms and cannon, troops have been herded on positions in a manner which would have been most disadvantageous even with the arms of a period long past. Thus it is again that neglect of old established principles has led to disaster.

Brigades drawn up on two lines in order of battalion with their artillery, cavalry and reserves, it has been hinted, need not relinquish this structure until the troops start to attack. We retain this close formation just out of fire range, because, from it, our dispositions are more easily and conveniently carried out. But when the attack is imminent and shot begin to fly pretty thick, it is the time for gradually increasing our intervals and distances, subject to unity of action, cover, and the employment of effective fire. With decently steady troops one need not be jealous of one's intervals, for their increase is subject to the protection afforded by the increase in range of modern arms, and no column of the enemy would be permitted to preserve its order for 800 yards, if attempting to break through them. Therefore a brigade of 5,000 men or 2,500 files on two lines with its battery, squadron, and auxiliary service, would occupy an area of 1,250 by 500 paces. To advance against an enemy with this spacing would be most hazardous, but we should retain the formation as the most convenient passage or order for the development from our columns of march to the formations for attack, and therefore a brigade should not be thus posted closer to the enemy than 2,500 yards. From this it should resolve itself into the true fighting formation for attack, and if not found in positions 1, 2, 3 and 4 as suggested, the vein is struck at all events which may lead to further researches for a better mode, and the safe point to work from is indicated.

In the above system, the second line operates in half-battalions at varying distance according to ground. The reserve, if any, is in quarter column.

#### RECAPITULATION.

From 2,500 paces, half-battalion columns to 2nd position.

From 1,500 paces, company columns to 3rd position.

From about 500 paces, line of alternate skirmishers and companies followed by supports to 4th position.

*N.B.*---4th position is separated from the enemy by an assumed 500 paces.

But to perfect this system of attack, the training of battalions should not be limited to obtaining the power of expansion in the advance. The line of attack should also possess a contractile power, partially or simultaneously applied, to facilitate concentration of fire, or, for seeking the shelter of natural features and operating at will on a smaller front. Thus, if the half-battalion or company columns have deployed, they can close again to column, and can reduce the interval on the battalion of direction, such interval movements in battalions being regulated on the base or leading companies of the battalion or battalions concerned.

These movements should be constantly practiced advancing and retiring and be rapidly executed on every sort of ground. These occasions will also afford instances of simultaneous, or partial rushes to seek offensive cover, by small or considerable portions of the line of attack. The "rally" from skirmishers or from any dispersed order which may be signified; for on collision with the enemy, the leading companies in the fourth position may have re-inforced skirmishers; should be also frequently practised, on the supports in company column in third position, or in half-battalion columns in second position. After a rally of this description the renumbering of the companies is necessary, supports becoming heads of columns, and the attack is renewed in the same or another direction.

From what precedes, it will be seen that the working of this system rests entirely on majors or wing officers of half-battalions, and more particularly on company officers, and that "the flexible chain" is maintained and controlled to the last. It can expand or contract, when required, it can rally and at any time, if necessary, it can form line on any point in two ranks. It is necessary, however, to repeat that a brigade assembles at a place of rendezvous in "concentrated order." It takes up a preparatory tactical position in the "order of battle," on two lines with a reserve or not, with artillery and perhaps cavalry, not to fight in that order precisely, but adopting it as the passage to the real attack described by positions 2nd, 3rd and 4th.

The regimental colors with their escort of N. C. Officers is an arrangement out of date, and incompatible with movements of attack in the present day. A light portable distinguishing "guidon" to accompany the commanding officer and to serve as a rallying point may alone be admitted.

In the distribution of command in the above system, odd companies should be commanded by the senior captains. The even companies (eventual supports) by the junior ones. They regulate the fire, superintend the cover, reducing, reinforcing and supporting skirmishers. They

judge when it is advisable to rally or deploy into line. The majors command and direct the half-battalions. They regulate cover and deployment and the formation from half-battalion to company columns and the rally to, and deployment in line from, half-battalions. In these formations they regulate the fire. In third and fourth positions they assist. After leaving the first position, the Lieutenant-Colonel or Commandant ceases to have any direct command of movements, fires, &c. but he superintends the general advance and direction with reference to those on the right and left of his battalion. If cover is not kept, if intervals are too great or too small, he interferes to correct defects. When advisable he can increase or reduce them. His eye is directed towards the enemy and while he leaves to subordinate officers the details of their small attacking columns, he gives his whole attention to the part of his battalion in the general movement, seeing that no scarcity of ammunition is experienced and that the men are well led.

#### FORMATION.

The companies on the flanks of a deployed battalion are termed right and left skirmishers.

If there are eight companies, the next three companies on the right are numbered 1, 2, 3 respectively from the right, and form the right half-battalion. They are commanded by the senior major. The next three companies on the left are numbered 4, 5, 6 from the left, and form the left half-battalion under the junior major, half-battalion columns are therefore formed on Nos. 1 and 4.

The outward half companies of skirmishers interpose themselves between the columns. The inward half companies continue on the flanks for their protection. To form company columns No. 3 company occupies its proper place in alignment and is at once covered by No. 4. Heads of column will then be 1, 3 and 5. By this arrangement it will be seen that whatever the effective strength of a British battalion of eight companies a system is arrived at which is not affected by numbers and which applies itself to the existing organization of the British Army.

*N.B.*—Battalions of six companies should pass from No. 1 position to No. 3. Battalions in quarter column, number in direct order, but No. 4 forms the left in deployment into line.

ISKENDER.





## III.

**OUR BASES OF OPERATION AND LINES OF COMMUNICATION IN INDIA CONSIDERED ESPECIALLY WITH REGARD TO THE STRATEGIC IMPORTANCE OF ALLAHABAD.**

---

ALL military men will be agreed as to the importance of considering beforehand what parts of India will be most likely the theatres of our future wars, where we must fix the bases of our operations, through what districts our lines of communication will lie, and how far these can be secured against attack.

Although many of the following remarks on our position in Upper India may appear trite and unnecessary to the majority of professional readers, yet as there may be some among them who have not had the opportunity of seeing this part of the country, I think, it will be best to review shortly all that appears to bear upon the subject, at the risk of wearying those officers who have already given it their attention.

The sea which at home is England's outer line of defence becomes elsewhere her principal base of operations, we must, therefore, in the first place look to the state of our chief seaports which should, as far as possible, be made unassailable. Before the opening of the Suez Canal and the completion of the Great Indian Peninsular Railway, Calcutta might be considered as occupying the first place, and Bombay as of secondary importance, but with increased facilities for communication with England on the one hand, and Upper India on the other, the latter must be considered as at least of equal importance with the former.

In case of war in Southern India, there would be few possible battle fields which could not be reached from Madras, Cochin, Bombay or other parts on the Eastern or Western coasts without extending to any very great length our lines of communication, but in the more probable event of disturbances on the North-Western Frontier advanced depots or bases are necessary, connected with one or more of our principal seaports by lines, which though necessarily of great lengths will not be difficult to defend. It is evident that, if otherwise unobjectionable, some point on the railway line between Bombay and Calcutta should be the first and largest of our inland depots, and the most cursory examination of the map will shew that Allahabad has paramount claims to consideration : its communication with Calcutta, both by road and rail, lie through territories whose inhabitants are averse to fighting, and physically unable to maintain a contest with more warlike races (though this cannot be said of the Dinapore and Arrah districts), the railway line and the road viâ Mirzapore are protected on the north from Oudh and Nepal by the Ganges, which below and also for some distance above Allahabad is a formidable obstacle ; on the south, tracts of

hill and jungle inhabited by scattered tribes interpose a natural barrier between Bengal and the Nizam's and other countries in the southern part of Central India. In addition to the road and rail, the river traffic is always considerable, and by means of steamers of light draught may be continued throughout the year. The present traffic is by means of steamers drawing three and a half to four feet of water, and towing barges of greater draught, and this is only interrupted for about three months of the dry season chiefly on account of the shoals between Dinapore and Allahabad. Again the railway from Bombay runs for a very large proportion of its entire length through hilly districts, thinly populated by Gonds and other primitive tribes, and is divided from Rajpootana westward of Jubbulpoor by the Nerbudda, and every where by barren ranges of hills in some places of considerable height ; to the south the greater part of the country consists of almost pathless forests. Besides these peculiar facilities for communication with our two principal ports Allahabad is on the direct line to the Frontier, it has two sanitarium in the rear of it, Puchmurree half way to Bombay and the hills through which the East India Railway line passes on the way to Calcutta, it has also great natural advantages as a defensive position which however I will consider at greater length hereafter.

When the Rajpootana State Railway is completed from Bombay through Baroda to Agra and Delhi, these latter will gain what only Allahabad has at present, that is to say direct railway communication in almost straight lines with both Bombay and Calcutta, but the line from the former will lie through Independent States, inhabited by warlike races and will be also liable to attack from the Punjab ; the latter passes through a great part of the North-Western Provinces and close to Oudh ; the traffic by water also, which might be of great service in time of war, cannot be much relied upon above the junction of the Jumna and Ganges at Allahabad. To keep open the lines of communication therefore from Agra or Delhi to Bombay and Calcutta if any disaffection existed in Northern India would be a task of enormous difficulty compared with what it would be from Allahabad. Besides, neither Delhi nor Agra is particularly well suited for defence, nor is the Fort at either place capable of containing a large arsenal. Allahabad then must certainly be the first great inland depot, and it has been fixed upon by the Government of India as the site of one of the three large arsenals of Northern India the fort is to contain large magazines, workshops and stores of all kinds with a siege train complete. On account of the vast distance however which intervenes between this station and our frontier towards Afghanistan, an intermediate depot for large reserves of arms, ammunition, and warlike stores, as well as workshops for the repairs, if not for their manufacture is absolutely necessary. The site for the arsenal has been fixed at Ferozpoor, and doubtless some good reasons have led to its selection, probably however this was owing to its position on the old Frontier, but any one looking at the map of India without any local knowledge of the Punjab must note that it is in a very advanced and somewhat isolated position.

And here we must take into consideration that the advisability of keeping a large proportion of our European troops in the hills is generally acknowledged, and that this proportion will probably increase every year. The hill station of Chukrata should soon be able to accommodate a considerable number, and it would appear good policy to enlarge Landour ; Deyrah too would be an excellent station for English troops, and with abundant grass and water appears well suited to Cavalry as well as Infantry. Should however there be objection to Deyrah, Roorkee or some other station near the Doon might be chosen instead. The Deyrah Doon then with the hills to the north, and perhaps, Roorkee should between them contain a large garrison, and it certainly seems natural to expect that the station chosen for an arsenal and depot, which must of course be fortified, should be so placed as to cover the line of communication with Allahabad. Umballa seems to be the most suitable place, or better still some spot nearer to the Jumna which would cover the bridge over that river which is the natural boundary of the Punjab on the west. No station short of Loodiana would give any protection to the Umballa and Simla road, which it might be important to protect, and Loodiana appears too advanced a post for our second depot. Having however but little knowledge of the Punjab, this is merely conjecture, and there may be very good reasons why Ferozepore should be preferred to Umballa, or to any other spot. It will, of course, be noticed that the road and railway are both protected to some extent while in the Doab between the Ganges and Jumna, before the latter is crossed between Saharunpore and Umballa.

Beyond this second inland arsenal, wherever it may be, no large manufacturing departments or very extensive magazines should be established, but depots of ammunition and stores on a somewhat smaller scale must be provided. Lahore should, perhaps, be the site for one of these especially as it now possesses such rapid means of communication with Kurrachee, a port which has lately risen and must rise higher in importance, and our frontier depot should, if possible, be so placed as to command the passage of the Indus and cover the principal passes into the valley of Cashmere perhaps at Rawul Pindi. Having had however as I have before stated no opportunity of studying the topography of the Punjab, I will not discuss these points but will recapitulate briefly the main principles which I have endeavoured to explain.

Our primary base of operations is the sea coast with depots of all kinds at Calcutta, Bombay, Kurrachee and elsewhere, our second arsenal would be at Allahabad, our third at or near Umballa, unless there is good reason for preferring Ferozepore. In addition to these we require two advanced depots, perhaps at Lahore and Rawul Pindee, on a smaller scale. With regard to their protection, our second and third arsenals since they can never be abandoned so long as we hold India, should be fortified so that they may not detain a large force to defend them in time of war, and so weaken our army in the Field. Our two advanced depots should also be protected, but the works need not be on so exten-

sive a scale. The forts already existing at Agra and Delhi should of course be kept up and at certain intermediate points fortified posts are necessary, there would probably be required two between Bombay and Allahabad, Jubbulpore being most likely one of these, or perhaps Hoshungabad on account of the road to Saugor ; between Calcutta and Allahabad, Chunar, which is said to be a strong place is perhaps sufficient as it must not be forgotten that although all communication by land might possibly be cut off, the river would always be open for the passage of gunboats. Between Allahabad and Umballa too some places must be chosen and unfortunately both Agra and Delhi are at some distance from the main line of railway with the Jumna between, but in any case however the fort at Agra would be very useful as it is of great strength unless exposed to the fire of well-served artillery. These fortified posts however and any places of refuge that may be constructed in isolated cantonments would only be of secondary importance compared to such positions as Allahabad, and they should not be of such strength as to occasion us any serious difficulty in retaking them if they should at any time fall into the hands of the enemy.

It is not my intention to enter upon the question of our harbour defences at Bombay. I propose, therefore, to consider next the strength of our position at Allahabad, and by what means its safety may be ensured.

Immediately above the new cantonment of Allahabad, the Ganges and the Jumna are about five miles apart, they preserve their distance pretty nearly, flowing from west to east, for about five miles when the Ganges makes a sudden turn to the south, and flows into the Jumna just below the fort. This Fort, built by the Moghul Emperors, presents towards the Jumna and Ganges high stone walls with small flanking bastions, but the land face has been remodelled by the English and consists of two fronts of somewhat irregular trace flanked by two demi-bastions and one bastion in the centre, the curtains being covered by ravelins and other outworks. The ditch is broad and deep with a cunette in the centre intended for a wet ditch, the rampart has a full revetement thirty-six feet high, and good command over the surrounding country, which is clear of buildings for a considerable distance from the glacis, except on the bank of the Jumna, where the buildings for the Gun Carriage Agency were commenced some years ago, and will probably within the next year or two, again be taken in hand.

The Jumna flows close under the Fort, and during the rainy season the Ganges, which is at that time about one and a half miles wide, also washes its walls but for a great portion of the year the river shrinks into a channel near the opposite bank, leaving a large tract of alluvial soil uncovered. This side presents facilities for attack by an army provided with a siege train, there should however be no difficulty in arming the fort with such guns as would render the occupation of this ground impossible to any enemy by whom we are likely to be attacked in this part

of the world. The Grand Trunk Road from Benares crosses the Ganges by a bridge of boats at about one and a half miles from the ramparts and the road lies across the dry bed of the river to the village of Dara Gunj, there are two places above the bridge where the river is fordable with some difficulty by the boatmen and other villagers who are well acquainted with the channel ; but partly on account of the constant changes in the bed, still more on account of the numerous alligators these fords are very seldom used. At the village of Papamhow where the Ganges changes its direction from east to south there is another bridge of boats. The Jumna is nowhere fordable, but the railway bridge, underneath which is an ordinary roadway, is about 2,500 yards from the fort and between the two is the landing place of the steamers and the fort railway station. The approach to the railway bridge from the opposite side of the river could be shelled from the Fort if some large rifled guns were mounted, or even by 68-pounders, but the only way to close the passage by night and day would be to establish a post at the bridge, and a "tete-du-pont" at the further end. The buildings for the Gun Carriage Agency are built in three or four lines parallel to the river so that the outer wall is flanked by the fire of the Fort and a horn-work is to be constructed at the north-west angle so that the whole enclosure may form an advanced work.

To the west of the railway bridge are bazaars and scattered houses and gardens occupied by natives and the city of Allahabad. Beyond this, on the bank of the Jumna, is the Karaila Bagh. A line drawn from this point outside the railway station and rest-houses, which are about the centre of the Peninsula and along the western boundary of the new cantonments, to the Native Infantry lines, will form the fourth side of a somewhat irregular rectangle the other approaches to which on the remaining three sides are by the railway bridge over the Jumna which it would be very easy to defend, by the bridges of boats across the Ganges which are removable at pleasure, by the fords across the Ganges which are constantly changing and are always difficult and are dangerous on account of the alligators which are much feared by the natives, and lastly by means of boats. As many of the latter as are in the neighborhood would be collected under the guns of the fort if an attack were expected, and by their assistance troops could be rapidly conveyed to any point on the opposite banks of of the rivers; it would evidently be impossible to bring any boats up the river if the fort were armed with large rifled guns, and if proper means were available for throwing a light on the river at night but they might be brought in any numbers down either the Ganges or Jumna unless batteries were constructed on each bank near the terminations of the natural boundary which I have described as extending from the Karaila Bagh to the Native Infantry Lines. The establishment of these posts naturally suggests the idea of adding intermediate works in the same line which would protect them from any danger of being attacked in rear, and at the same time bar the passage of the isthmus, and so convert into an entrenched camp the whole of the peninsula which will be about five and a half miles long and

five miles wide, protected on the south by the Jumna, on the east and north by the Ganges, and on the west by the proposed batteries. The importance of this position as a strategic point has been already shown and within the enclosure would be included, the railway station with its workshops for the repair of rolling stock, the commissariat establishments, the old and new barracks and ample space for the encampment of large bodies of troops and for stores of all kinds. To protect so much it would seem to be good policy and true economy on the part of Government to incur considerable expenditure, but it is probable that thanks to the long range of rifled guns and muskets and to the invention of breech-loading and repeating weapons, the desired object could be obtained by comparatively small expenditure. Nor must it be imagined that this would lead to the locking up of large numbers of men within fortifications, on the contrary, these should be defensible by a small force against a large number of assailants and so enable the largest possible number of men to take the field for active operations. The best form however for such fortifications is a point which requires much deliberation, but on which I beg to offer some suggestions for consideration.

Earthwork is every where comparatively inexpensive, and this is particularly the case in this country where unskilled labour is cheaper compared to skilled labour than elsewhere.

There will therefore be no difficulty in giving such a command to these works as will compensate for the want of elevated sites from which to obtain a good view of the ground between, and in front of, the works, it follows that the ditches will also be broad and deep, but their sloping sides will offer very slight obstacles to an assault. Masonry scarps and counterscarps would enormously increase the cost of the work, and the following are therefore suggested as inexpensive but effectual substitutes ; at the foot of the counterscarp or palisade, in the centre of the ditch a cunette ten feet deep and twelve feet wide rivetted with brickwork and at the foot of the scarp a double hedge of cactus or other thorny shrubs which in a few years would become impenetrable ; a similar hedge might be planted on the berme. Flanking fire for the ditches must of course be provided, and this may be done either by tracing the works with bastioned fronts or by placing caponieres in the ditch ; in this country the latter plan appears decidedly preferable as in fact it probably will be found in every country. One of the disadvantages of a caponiere was that it was difficult from a few loopholes with muzzle loading weapons to keep up a sufficiently rapid fire, but the introduction of breech-loaders has completely silenced this objection and this is above all the proper place for the mitrailleuse, one of these placed in each face so as to sweep the cunette or the front of the hedge should render the capture of these forts by assault impossible under any circumstances. Each must be armed with guns whose fire will be effective almost if not quite up to the glacis of the next fort and a small magazine, a store house and barrack to shelter the garrison would be requir-







ed inside. Two forts would probably be necessary one to the north and the other to the south of the point where the railway crosses the Cawnpore road which may be taken as the centre of the position or it might be better to place one rather larger work at this spot which possesses such great facilities for communication in rear and a smaller work on each side of it, half way between it and the batteries on the banks of the rivers. With the large European population of Allahabad, the majority of the infantry requisite for defending these forts should be furnished by the volunteers whose numbers and efficiency might probably be greatly increased by a little more encouragement on the part of the government. The forts too, constructed in the manner above suggested, would be well adapted for defence by imperfectly disciplined troops. We should of course when necessary have boats on the two rivers, steel gunboats drawing little water and carrying powerful rifled guns if they were available, if not, ordinary river steamers armed with the largest guns they can conveniently carry which could be shipped at Calcutta ; these boats would be invaluable, they would render the passage of either river by means of boats, bridges or fords impossible, they would also by harassing the rear and flanks of an enemy greatly assist in repelling an attack by the isthmus, though for this purpose they are not of much use in the dry season as the rivers are so low that very little beyond the banks can be seen from the deck of a boat. I will not now enter upon the discussion of any further details with regard to the defensive works which I have above suggested, my only object has been to shew the importance of Allahabad as a strategic position and its peculiar facilities for defence.

G. T. PLUNKETT, LIEUT., R.E.



## IV.

NARRATIVE OF THE CACHAR COLUMN,  
LOOSHAI EXPEDITIONARY FORCE,

BY

LIEUTENANT-COLONEL FRED. ROBERTS, V.C.,

*Deputy Quarter Master General.*

THE Looshai expedition of 1871-72 having been brought to a successful termination, it is proposed to give an account of the operations of the Cachar Column, but as the whole of the south eastern frontier of Bengal is a terra incognita to the majority of the officers of the army, it will be interesting, perhaps, in the first place to give a sketch of our relations with the Looshais for some years previously, and to trace the successive reasons which led to an armed force being sent into their territory.

Between the southern extremity of the Cachar district and the northern boundary of the Chittagong Hill Tracts, lies a belt of land about 100 miles in length, traversed by high ranges of mountains running nearly due north and south, and inhabited by a number of savage tribes, which are known by the common name of Looshai.

On the Chittagong side these mountains come down to the Kurnafolie and other rivers flowing in a south and south-east direction, and are all more or less inhabited; while towards the Cachar frontier the valleys become broad and swampy, and are almost entirely devoid of population; the climate in this part is without doubt unhealthy, but the absence of inhabitants is probably not due so much to this cause, as to the repeated raids of more powerful neighbours, for deserted village sites are common on the hill sides, and our troops, when employed in the country in the seasons of 1869 and 1871, did not suffer excessively.

On the west the Looshai country is bounded by Independent or Hill Tipperah, and on the east by the great range of mountains running towards the confines of Burmah; how far the tribes inhabit the hills in this direction is not accurately known, but it may be roughly estimated that their territory extends about 100 miles from north to south, and 90 miles from west to east.

Tipperah is inhabited partly by Kookies under chiefs of the Poitoo family, whilst on the Cachar frontier they are mainly of the Thadoo branch; between these people and the Looshais there has been constant

intercourse for years past, indeed an influential Tipperah Kookie, by name Gnurshailon, married a sister of Sookpilal, one of the most powerful of the western Looshais, and grand-son of Lalul, who may be considered as the first of the present line of chiefs.

The real state of the case is, that the Looshais are merely a family of the great Kookie tribe, and that the several clans of Kookies, although they may have feuds with particular villages, intermarry with them, and frequently leave their own chiefs to settle under a prosperous and popular Looshai.

The chiefs on the frontier of the Chittagong Hill Tracts are said to belong to the same family as Lalul, and notwithstanding that the northern tribes affirm, they have but little intercourse with those in the south, it is evident that an intimate connection exists between all the Looshais, for whenever the southerners wish, they pass with impunity through the territory of Sookpilal and other northern chiefs; indeed, it is a curious fact that of late years the Howlongs and Sylhoos, dwelling in the south, have raided but little in the Chittagong Hill Tracts, preferring expeditions to more distant Cachar, probably, because they felt that their proximity rendered them more liable to punishment from the Chittagong side, and because the tea gardens of Cachar afforded them a larger amount of plunder.

For many years after the British took possession of the Cachar district, little or nothing was known of the Looshais, and had they been content to make war one with another, as is their normal state, in all probability no enquiries would have been made about them; but by degrees they encroached on the boundary which had been drawn between the two territories, until in the latter part of 1849, they attacked a village situated on the Roopacherra, eight miles south by east of Chargola, killing several of the inhabitants, and carrying off others as slaves.

The boundary line extended from a few miles above Luckeepore on the Barak to the northern limits of Hill Tipperah, passing through the southern extremity of the Chatachoora range, and the Looshais had been informed that any depredations committed on the British side of this line would be severely punished. As soon, therefore, as it was clearly proved that the plundered village was situated within the British border, and the whereabouts of the raiders was ascertained with tolerable certainty, government determined on carrying their threat into execution, and orders were accordingly issued to Lieut.-Colonel Lyster, Political Agent in the Cossyah and Jynteah Hills, and Commandant of the Sylhet Light Infantry, to organise a small force for the purpose.

Colonel Lyster's arrangements were speedily made, and on the 4th January 1850 he started from Cachar with one officer, Lieut. Raban, and 235 men of all ranks of his own regiment. He marched nearly 100 miles due south without coming across any habitations, until at daybreak on

the 15th he reached the village of Morah, the residence of the Rajah Mullâh—the raiders had been led by a chief named Lalpoo, but as he had died before the troops reached Morah, and as Mullâh was the acknowledged head of the tribe, Colonel Lyster determined on destroying his village, which consisted of 800 to 1,000 houses, regularly built and filled with grain, cotton cloths, &c.

As a confirmation of the guilt of Mullâh, an Abkaree perwannah was found in his house dated 1849, bearing the name of a man belonging to the plundered village of Tripoorah.

The country was described by Colonel Lyster as being quite uninhabited, and covered with dense jungle of bamboos and large forest trees, at the same time, the track by which the force advanced was well marked, and evidently constantly frequented, shewing that this road was the one used by the Looshais in their raids on Cachar.

Colonel Lyster halted only for one night at Mullâh's village, leaving it on the 16th and returning to Cachar on the 23rd January. He considered that the great strength of the enemy, which he estimated at from 5,000 to 7,000 fighting men, the difficult nature of the country, the distance from any supports, and the smallness of his detachment (upwards of seventy men having been left in stockades on the road), did not justify his remaining longer than was absolutely necessary to rest his men.

Some 400 captives took advantage of the presence of the force to make their escape, but notwithstanding this and the loss consequent on the destruction of so much property, Colonel Lyster did not feel very sanguine that the expedition would have any real effect on the tribes, beyond shewing them that it was possible for us to penetrate their jungles; indeed, he expressed his opinion that to subdue them thoroughly, a well-appointed force of not less than 3,000 men should be employed, and that a portion of it should consist of Europeans.

Colonel Lyster admitted that small detachments might enter the country from time to time, and, after destroying one or two villages, retire hurriedly as he had done; but it would be at very considerable risk, and would only result in stirring up the enemy to fresh outrages; and he considered that unless operations were undertaken on a large scale, and a decisive blow struck, the whole of Cachar, south of the Barak, and probably a great extent of country in the Sylhet district would become a desert.

As a temporary measure, Colonel Lyster recommended arming a few hundred Kookies, and posting them in stockades along the frontier at the most frequented passes into Cachar and Sylhet; and he advised that a number of condemned muskets should be handed over to the Superintendent of Cachar for distribution among the frontier villages, at the same time he gave it as his "confirmed impression that this "robber tribe will not cease to infest the frontier until they shall "have been most severely dealt with."

The Bengal government entirely approved of the manner in which the operations had been carried out, but were very averse to an expedition on a larger scale, which " would only be justifiable if it were " found unavoidable consistently with the protection of our own people " from outrage and massacre," and it was ordered that every endeavour should be made to open a communication with the " great chief of the Looshai tribe" in view to explaining to him that raiding in our territory would not be permitted, and that if persisted in, more severe punishment would be inflicted.

About this time a special force for the protection of the frontier was organised, called the Kookie Levy, which in 1863 was amalgamated with the Police of the district.

For some years after Colonel Lyster's expedition, the frontiers of Sylhet and Cachar were tolerably free from disturbance, but early in 1862 a series of aggressions occurred in Sylhet, terminating with one known as the Adumpore massacre, and from that time raids have been made almost annually on both districts.

At the end of 1865, government contemplated sending an expedition against Sookpilal, who had the audacity to threaten war against the British, if certain demands (in revenge for the death of three of his men who had been killed while attacking a tea garden in Hylakandy), were not acceded to within six weeks. On hearing that a force of Police was being collected, Sookpilal sent messengers into Cachar to make overtures for peace; he deprecated the anger of government and pleaded that he could not restore certain captives who were carried off in a recent raid, as they had been sold to chiefs in the south, but he promised that if forgiven he would be a peaceful neighbour in future. Notwithstanding that some considerable time had been spent in getting information about the country and the exact position of Sookpilal's villages, as well as in making the necessary arrangements to prevent the force being short of carriage, supplies, &c., the reported difficulties of the road, and the want of any knowledge as to the amount of opposition with which it was in this chief's power to meet the party, induced the authorities, too readily, to accept the opportunity thus offered, for dispensing with the expedition, and messengers were accordingly despatched inviting Sookpilal to come into Cachar and treat.

Sookpilal himself never appeared, but as a proof of the sincerity of his intentions, he sent four captives and two or three muntrees;\* friendly communications and presents then passed between our officers and the chief's emissaries, and the practical result was that Sookpilal escaped without punishment for his attack on our territory, and for his subsequent insolent bearing, and that his friendship was almost pertinaciously sought, in spite of considerable unwillingness on his part to come

---

\* Headmen of the tribes.

to terms. Sookpilal no doubt attributed our forbearance to fear of his superior power.

For a year or two the frontier was unmolested, but the policy of conciliation only made the Looshais bolder; and in December 1868 another raid was made on Adumpore, when two constables were wounded; other villages were then sacked and outrages committed, and on the 15th January 1869 the tea gardens at Monierkhal and Nawarbund were attacked.

Government became alive to the necessity of preventing these constant aggressions, and gave orders for the despatch of two columns from the Cachar district, one to proceed along the course of the Sonai in the direction of Sookpilal's villages, the other by the valley of the Dullesur towards Gootur Mukh and Beparee Bazar, while a small detachment of military and police was directed to advance, as a *feint*, from Komber ghat in the Sylhet district.

Each column consisted of half the Eurasian Battery, 350 Native Infantry, and 50 Frontier Police; the 7th regiment furnished the Infantry for the Sonai or left column, and the 44th Regiment that for the Dullesur or right column, the former being commanded by Major Stephenson, 7th N. I., and the latter by Brigadier General Nuthall.

The two parties started from their respective bases at Nundigram and Julnacherra on the 20th February 1869, by which time 20 days provisions for the whole force had been collected; for the carriage of the stores and baggage 30 elephants, 24 bullocks, and about 200 coolies were allotted to each party.

The east column reached Moizal a village near Looshai Hât, while the west one only got as far as Pukwa Mukh, two marches to the south of Julnacherra, and only a few miles beyond the British Territory: both columns returned to Cachar by the middle of March without meeting with any opposition, and without effecting any of the objects for which they started.

That the expedition was unsuccessful is not to be surprised at, it was hurriedly got together, there was no attempt at organization, and it was despatched, too late in the season, to afford any reasonable hope of its being able to penetrate far enough for punishment.

There would have been a better chance of success if the force had not been divided, Colonel Lyster pointed out ten years before, that to send small detachments into the country was only to court disaster, if therefore the two columns had even started earlier, and all the necessary arrangements for the supply and transport of provisions, &c., had been perfected in every way, it was scarcely possible that they would arrive at their destination in sufficient strength to subdue the Looshais; indeed, it is highly probable that, if the season had admitted of their advancing

far enough to encounter the enemy, they would have been forced to retreat before overwhelming numbers, so that it was perhaps fortunate the commanders found themselves obliged to leave the country without striking a blow.

Up to this time then, it is clear, that nothing had been done to convince the chiefs of our superiority, or to disabuse their minds of their belief in their own power and inaccessibility. This was more especially the case with regard to Sookpilal, and it was accordingly suggested by the local government, that further measures should be adopted, with a view to placing our relations with the tribes on a more satisfactory footing.

It was urged that we had done everything to bring about friendly intercourse with these people but without any result, that we had patiently borne their repeated refusals to accept the conciliatory terms offered to them, and that our overtures had been replied to by the outrages which led to the recent futile operations.

It was further urged that before any definite or lasting arrangement could be made for securing the good behaviour of Sookpilal and other chiefs, and before the Looshais could learn to appreciate our friendship, they should be made to feel the force of our power, and to recognise our ability to punish, and for this purpose it was essential that a carefully organised expedition should be sent into their country, during the cold season of 1869-70.

These proposals did not meet with the approval of the Government of India, who declined to "consent to any renewal of active military operations against these wild tribes;" indeed, a decided opinion was expressed that "the time had arrived for the trial of another policy" which may briefly be described as follows.

To locate an officer in the Looshai hills, for the purpose of entering into engagements with the chiefs of the tribes.

To require them to refer to him for adjustment, all disputes between themselves and the villages on the frontier.

To demand from them a nominal tribute.

And generally to place our intercourse with them on a sound and improved basis.

At the same time it was directed, that the frontier should be put in a fitter state for resisting sudden and unprovoked attacks.

Strangely enough about this time, some of the chiefs intimated their intention of sending messengers into Cachar, to confer with the local authorities, in view to bringing about a better understanding between their tribes and the British government; these overtures were eagerly responded to, and on Mr. Edgar, the Deputy Commissioner of the district,



expressing a wish to return with these messengers to the Looshai country, and endeavour by their help to obtain an interview with some of the leading chiefs, it was arranged that he should do so accompanied by a small guard for strictly defensive purposes.

The instructions given to Mr. Edgar were, that he was to use the greatest caution, and never to advance where there was the slightest danger of opposition, never to go to any place from which he could not in safety and without difficulty return, and never to do any thing likely to entail risk of a collision with the tribes.

In the event of his party being properly treated, Mr. Edgar was to invite the chiefs to settle in the belt of country to the south of Cachar, between the confines of Munipore and Hill Tipperah, where they were to be treated as independent, and to be promised a supply of arms and ammunition, on their pledging themselves to be peaceful and friendly neighbours.

On the 20th December 1869, Mr. Edgar left Cachar accompanied by Major John Macdonald of the Revenue Survey, 3 sepoys, Dost Mahommed, an Inspector of Police, 21 constables, 115 coolies, two of three native officials and a few Looshai guides or scouts. The route at first lay by Bonkong and Parsonseep towards the villages in the neighbourhood of the Sunai, where they arrived on the 1st January 1870, and remained until the 8th February, when they left for the valley of the Dullesur, travelling in a south westerly direction, and reaching Beparee Bazar, the centre of Sookpilal's territory, on the 21st of the same month.

Mr. Edgar was encamped for several weeks at Beparee Bazar, trying to bring about a meeting with Sookpilal, who wished to come in (so it was reported), but was deterred by the fate of Lal Chokla, a chief who surrendered to Captain Blackwood, commanding the Sylhet Light Infantry in 1845, relying on a promise\* of pardon, but who was afterwards tried at Sylhet and transported for life.

Mr. Edgar displayed considerable tact and patience, and succeeded on the 22nd March in inducing Sookpilal to visit him in his camp; after friendly greetings had been interchanged, and a few preliminary matters settled, Mr. Edgar carefully explained the object of his mission, adding that it was the wish of his government to fix a boundary between the British and Looshai territories, which should be respected by both powers.

---

\* Of course Captain Blackwood did not know of any promise, but it is extremely probable that one was made by Lalmi Sing, a cousin of Lal Chokla's, who served as a guide on the occasion. It is a curious coincidence that the half battery which formed part of the Cachar Column Looshai Expeditionary Force in 1871-72, was commanded by Capt. G. Blackwood, Royal Artillery, eldest son of the Captain Blackwood who captured Lal Chokla.

Sookpial replied that a boundary had been decided upon some years previously, and he saw no reason for altering it; this line as mentioned before, started from near Luckeepore, but, owing to the rapid spread of tea cultivation on the banks of the Barak, it had become necessary to bring the country further south under British protection; Mr. Edgar, therefore, proposed that the new boundary should commence at Tipai Mookh, and meet the old one on the southern extremity of the Chatachoora; this was eventually arranged, and Sookpial on the part of the western chiefs agreed to respect this line for one year, and to send people into Cachar the following cold weather to settle upon a permanent boundary. The meeting then broke up, and on the 25th March Mr. Edgar commenced his return journey to Cachar, where he arrived at the end of the month travelling, down the Dullesur on rafts, as far as Julnachera.

During his stay in the country, Mr. Edgar ascertained with tolerable certainty, that the Thadoos and other Kookies in the Cachar district, had been doing all they could, for years past, to work up the Looshais to raid on the gardens, by making them jealous of tea cultivation, and telling them that in course of time their jooms\* and villages would be taken up by planters, and they themselves forced to work as coolies.

Many of these Cachar Kookies formerly possessed land in the country, but owing to the encroachments of their neighbours, they have been gradually driven across the British border, and although as explained above, constant intercourse is maintained between the Looshais and themselves, the head men of the expelled clans have not forgiven the wrongs they suffered, and, as the great object of their life is to return to their ancient village sites, they naturally endeavour to frustrate the conciliatory line of policy, feeling that, by forming friendly relations with the Looshais, we are injuring them.

It was not, of course, to be expected that Mr. Edgar's visit could produce any results of such a character as to prevent all anxiety for the future, nevertheless, a certain amount of benefit was derived from the expedition; we acquired a great deal of useful information regarding the chiefs of the different tribes, especially as to their respective position and importance, we added very considerably to our geographical knowledge, and we established the fact that the villages of Sookpial and other neighbouring chiefs were by no means so inaccessible as was supposed; but perhaps the most important result was the opportunity it afforded Mr. Edgar, of offering a valuable opinion on the line of policy advocated by the government of India.

He concurred generally in the views of government, but with regard to locating an officer permanently in the Looshai territory he objected most strongly for the following reasons, *viz.*—

Unhealthiness of the climate, except for a few months during the cold weather.

---

\* Cultivated land.

Expense of maintaining an officer in the heart of the country with a suitable guard.

Difficulty of finding a good position with a constant supply of water, and of conveying food and stores to the place selected.

Extreme dislike of the people to such a measure.

Mr. Edgar considered that we should interfere as little as possible with their internal relations, and that while using all our endeavours to obtain a controlling influence over the tribes, we should leave them nominally independent ; he further recommended that every inducement should be held out to them to settle near our border, that as the hills became populated, a road should be pushed on in the direction of Chittagong, that a British officer should be placed at Agartollah to investigate and settle disputes between the Looshais and the inhabitants of Hill Tipperah, and that in order to foster trade with the people of the plains, a yearly visit should be made to the country by one of the Cachar officials.

To give full effect to these suggestions, Mr. Edgar proposed that he should be allowed to repeat his visit during the cold season of 1870-71, and, in concert with Sookpila and other influential men, determine the boundary between the British and Looshai territories. He was very sanguine that by working in this way we should, in the course of a very few years acquire great influence over the tribes, and that, while we should not be in any way bound to protect them from the aggressions of more powerful neighbours pressing on from the vast unknown forests of Burmah, we should be in a position to strengthen them against such assailants, and in many ways to help them to keep the lands they now occupy.

In addition to the active co-operation of the political officers in Munnipore and Tipperah, Mr. Edgar considered that it would be very advantageous, if the authorities on the south were to work as much as possible in concert with those at Cachar and Sylhet, for, although our relations with the Looshais on these frontiers were not to any great extent influenced by the dealings of the Chittagong Hill Tracts, still it appeared very desirable that a similar line of policy should be carried out from north to south.

In supporting Mr. Edgar's suggestions, the Lieut.-Governor of Bengal stated that he did so, not because he believed we should have any sure guarantee for the future good conduct of these people until they had had a really practical proof of our power, and of our intention to use it when necessary ; but because he was desirous of giving every assistance to the alternative policy.

The proposals met with the approval of the Supreme government,

and Majors Graham and Macdonald were deputed to proceed from the Chittagong side towards the villages of Ruttun Pooea and the Sylhoo territory, while Mr. Edgar accompanied by Mr Burland, a tea-planter, made his way towards Sookpilal's country.

During the previous rainy season a deputation from Sookpilal visited Cachar, and two of the muntries promised they would return in November to guide Mr. Edgar by the Rengtipahar route; from reports, however, brought down by traders, it was ascertained that they were not likely to keep their word; Mr. Edgar therefore determined to start without them, and on the 11th December 1870 he left Cachar, and travelling via Dowarbund and the Rengtipahar, reached the Dullesur on the 23rd idem, where a halt was made for several days.

At first the Looshais shewed considerable reluctance to visiting the camp, and Mr. Edgar began to fear that the confidence which he had been at such pains to inspire on the occasion of his last visit, had been entirely lost, eventually, however, matters began to mend and by the middle of January, the camp was crowded with men, women and children, who seemed never to tire of watching the proceedings of the two Englishmen.

On the 15th January Sookpilal paid his second visit, when the sunnud or written engagement, which had been prepared before Mr. Edgar's departure from Cachar, was read, and each clause carefully explained.

In the sunnud the boundary was clearly defined, and Sookpilal declared himself perfectly satisfied with it so far as it related to the country between the Sunai and the Chatachoora range, for which portion he accepted all responsibility, but he begged it might be distinctly understood, that as he had no authority to the east of the river, arrangements for the safety of that district must be made with the eastern chiefs.

On the occasion of the first visit in 1870, Sookpilal had preferred a complaint against some Poitoo Kookies living in Hill Tipperah, and when the clause regarding disputes being referred to the Deputy Commissioner of Cachar was read, he asked whether his complaint of last year had been enquired into; it was then explained that a political officer would shortly be appointed to Tipperah, and that justice should be done him; this apparently satisfied Sookpilal who said he was afraid the matter had been lost sight of.

Mr. Edgar then stated that, if the Looshais fulfilled all the conditions required of them, and shewed clearly that they intended to behave well, the question of helping them with arms and ammunition would be considered in two or three years.

Sookpilal and his muntries expressed their willingness to abide by the terms of the sunnud, which was then signed by the civil officer, and made over to Sookpilal, who shortly afterwards took his departure.

During the eight months succeeding Mr. Edgar's return from the Looshai territory, the trade in India rubber had increased considerably, no less than 1,000 maunds, valuing probably Rs. 30,000 having been exported into Cachar. This fact, coupled with Sookpila consenting to a second interview, caused Mr. Edgar to feel very sanguine that good would result from his yearly visits, it must therefore have been a severe blow to him, and to the advocates of the conciliatory policy, to find that at the very time the representative of the British power was in personal communication with the acknowledged chief of the western tribes, outrages of a more serious character than had ever been known before, were being committed in the Chittagong Hill Tracts, in the Munnipore territory, in the tea gardens of Sylhet, and within a few miles of the principal station in the Cachar district.

At the meeting with Sookpila, Mr. Edgar was informed that a party of Sylhoos had gone northwards in the direction of Adumpoie, though for what purpose that wily old chief feigned ignorance. Mr. Edgar appears to have doubted the correctness of the report, but at the same time he considered it advisable to communicate it to the authorities in Cachar, Sylhet and Chittagong. The following morning, however, intelligence was brought that a number of people from the villages of Vonolel were on their way towards Cachar, and from this time rumours of attacks having been made on the British territory reached Mr Edgar almost daily.

The first raid occurred in the Chittagong Hill Tracts on the 31st December 1870, at a little more than a day's journey from the Chima outpost, the enemy were about two hundred strong, but whether they belonged to the Howlong or Shindoo tribe was never clearly ascertained ; the loss to the villages was not great, only two men being killed and one carried off, while out of a party of nine Goorkha constables, who acted very gallantly in following up the enemy, two were killed.

In the north hostilities commenced on the 23rd January, when the village of Ainerkhal on the extreme west of the Cachar district, was burned, twenty-five persons being killed, and thirty-seven taken prisoners.

The same day the tea garden of Alexandrapore, some miles to the south of Ainerkhal, was destroyed by another party, Mr. Winchester, the planter, being killed, and his child, a little girl of about six years of age, carried off.

A few hours after, the adjoining garden of Cutlicherra was attacked, but the enemy were driven off by two planters, Messrs. Bagshawe and Cooke, not, however, before five coolies had been killed and others wounded. In the evening Mr. Cooke, assisted by some Cabul merchants, went over to Alexandrapore, recovered Mr. Winchester's body and brought back the wounded coolies ; the following day a second attack was made on Cutlicherra when two of the Looshais were wounded.

On the 26th January, the raiders having surprised some sepoy and police in the Monierkhal garden, killed one sepoy, wounded a second and a policeman, and then commenced to attack the stockade and coolie lines. Information was quickly sent to the officer commanding at Cachar, and the following day Mr. W. Daly, District Superintendent of Police, arrived from the station with twenty-two sepoy of the 4th Native Infantry and ten of his own men; the enemy made a bold stand and successfully resisted two sorties from the stockade, but during the night of the 28th they retired to their jungles, having suffered a loss of fifty-seven killed and wounded: the total casualties on our side being six killed, six wounded and one (a coolie) missing. Mr. Eglington, a planter received the thanks of government for his conduct on this occasion.

Simultaneously with the attack on Monierkhal a party proceeded to plunder the adjoining garden of Dhurmiakhal, no lives were lost, and but little damage was done to the property.

Emboldened by these successes, the enemy penetrated as far as Nundigram, only fourteen miles from Cachar, where on the 27th January eleven persons were killed and three carried off; the following morning the rear guard of Mr. Daly's detachment was attacked, soon after leaving Nundigram; the guard which consisted of eight men of the 4th N. I., fought most gallantly, and thus enabled the constable and coolies with the baggage to get away; eventually, however, it was overpowered and only one man escaped to tell how admirably the small detachment had behaved. The Looshais afterwards acknowledged to having lost twenty-five men on this occasion.

On the morning of the 23rd February, the Julnacherra tea garden was attacked by an armed party, which killed and wounded seven coolies before the police could drive them off.

This was the last of the aggressions in the Cachar district, but in Sylhet, Tipperah and Munnipore, raids continued until the beginning of March.

The village of Cachanpora near the Chargola outpost in Sylhet was almost completely burnt down on the 23rd January, upwards of twenty people being killed and several young women being captured; the following day an attack was made on a village quite close to the outpost itself when two men were killed.

On the 27th February, a village near Allynuggur was attacked, Captain Robertson, who commanded the detachment of the 44th Sylhet Light Infantry, drove the enemy into the hills, after killing three men and wounding several others, besides capturing ten muskets and two daos.

In Hill Tipperah, disturbances commenced towards the latter part of January, and continued until the 2nd March, during which time several villages were destroyed, and numbers of the inhabitants were killed and wounded.

From Munnipore, the political agent reported, that on the 15th February a village in the hills to the south-east of the valley, was plundered, forty persons being killed, and about half that number carried off, no attack had ever been made before so far to the east, but the Munnipories felt tolerably sure that the Looshais were the aggressors, and that the raid was occasioned by the death of Vonolel, the most powerful chief of the eastern tribes.

Whilst these outrages were being perpetrated, the Commander-in-Chief, accompanied by Brigadier-General Bouchier C.B., commanding the Eastern Frontier, happened to be on a tour of inspection through the district, and the first intimation of any anxiety for the safety of the southern posts, was received by His Excellency on the 20th January, when the officer commanding at Shillong reported that the Magistrate of Sylhet had applied to him for troops.

On the 25th of the month intelligence of the attack on Ainerkhal reached Lord Napier of Magdala, who was then at the small coaling station of Dhoobree on the Brahmapootra, and on His Lordship's arrival at Gowhatty, a day or two afterwards, telegraphic reports were received of the raids on the several tea gardens, and of the murder of Mr. Winchester.

The Commander-in-Chief recognizing the urgency of the case, ordered General Bouchier to proceed at once to the disturbed districts, for the purpose of obtaining information of the doings and movements of the hill tribes, and His Excellency directed that evidence should be collected as to those implicated in the outrages, and above all that the safety of Mr. Edgar and his party should be secured.

The Brigadier General with his staff officer Captain H. Thompson left Gowhatty the following morning, and before night reached Shillong, a distance of 63 miles.

The troops on the frontier were at this time disposed as follows—

At Cachar      2 Companies of the 4th Native Infantry

At Chargola   1            "            "            "

At Sylhet      1            "            "            "

The remaining 4 Companies of the regiment being at Dacca.

At Shillong Head Quarters and 7 companies of the 44th N. I.

At Jowaie 1 company ditto.

A company of the 44th under Lieutenant Bourne, had left Shillong on the first call for troops, and had pushed on towards Chargola in order to watch the valleys of the Singla and Lungai rivers. On arriving at Kareemgunge, Lieutenant Bourne heard of the attack on Chargola, and marched thirty-five miles during the night of the 27th January, reaching Chargola at 9 A.M. the following day, no easy task over the swampy plains and through the dense forests of Sylhet.

Captain Lightfoot with another company of the 44th, started from Shillong on the 28th January, reaching Sylhet on the 30th, and Cachar on the 3rd February, where he was joined the same day by Lieutenant Bourne's detachment.

The Head Quarters and all available men of the 44th Native Infantry left Shillong on the 29th January for Cachar, detaching one company from Sylhet to Allynuggur, while a company of the 4th Native Infantry, which had been hurriedly brought up from Dacca, was sent to Chargola to relieve Lieutenant Bourne.

All this time the greatest anxiety was felt for the safety of Mr. Edgar, from whom nothing had been heard since the 21st January, when he was about to leave the camp at Changsil on the Dullesur for the valley of the Sunai. On the 17th of the month, he had written to Cachar requesting that supplies might be sent up the Sunai to meet him at Looshai Hât, but he did not like leaving Changsil, until he knew that the provisions had been despatched from Cachar, for the coolies with him could only carry food for 12 or 13 days, and boats frequently took that time in coming up the river ; the required information reached him on the 25th January and the following day he started for the Sunai.

Owing to the coolies being heavily laden and the difficult nature of the country, the marches were necessarily short, and it was the 30th January before the party arrived at Punchangkai, a small encamping ground a little higher up the river than Looshai Hât.

During this march, Mr. Edgar was puzzled by observing, armed men continually hanging about his camps ; various reasons were given by the muntries to account for their presence, but he did not find out the real one until some time afterwards, when he discovered that the men had been posted for the protection of himself and party, Sookpilal fearing lest they should be molested by the raiders on their return from the Cachar gardens.

More than sufficient time having elapsed to enable the boats to reach his camp, Mr. Edgar began to feel very uneasy at their non-appearance, food never actually ran short, for the Loshais sent in daily a few fowls and small quantities of rice, but there was nothing to spare, and the supply was at the best most precarious, depending, as it did, entirely on the good will and friendship of Sookpilal's people.

On the 10th February it was decided to send six constables down the river to ascertain, if possible, what had become of the boats, the men were ordered to go as far as they could that day, and come back the next ; on their return they reported that they had been a considerable way down the stream without coming across any signs of the boats, or observing anything suspicious on the banks, and that they had put a flag on a bamboo to shew how far they had gone ; this was the mark, as will be seen hereafter, which alarmed Captain Lightfoot's scouts.



Mr. Edgar now felt extremely anxious for the safety of his party, the reports which reached him daily of attacks on the British territory, made him fear that his messengers had either been murdered or taken captive by some of the marauders; out of his small force he had already sent six men to Cachar, and although it seemed hazardous to reduce the number left with him, the suspense and longing for news became at last so unbearable, that he determined to make one more attempt to communicate with the station, and on the morning of the 16th February, he despatched two constables and two coolies with a letter to the Deputy Commissioner.

As soon as these men had started, Mr. Edgar took counsel with Mr. Burland, the only other Englishman of the party, with Dost Mahomed, the tried Inspector of Police, and with Hurry Thakoor a confidential Bengalee, on whose tact and intelligence Mr. Edgar knew he could rely; one and all agreed that they should wait until the 22nd of the month, and if no news of the boats reached them by that time, they should send for the headmen of the neighbouring villages, and inform them they were going down the Sonai to find out what had become of their supplies, and in this way endeavour to reach Cachar.

On the 20th February some Looshais from the eastern villages came in, and with them a muntree of Sookpilal's, who represented that the people were very anxious Mr. Edgar should go through their villages to Tipai Mookh, and that they would do anything he chose to demand, in proof of their fidelity. he was fortunately spared having to decide on this new route, for in the midst of the discussion five messengers arrived with a letter from Captain Lightfoot, who had been sent up the Sonai in charge of the provision boats. The following day this officer reached the camp with fifty men of the 44th Native Infantry, and on the morning of the 24th February Mr. Edgar took his departure from Looshai land, and arrived at Cachar before the end of the month.

We must now return to General Bouchier, and see what strenuous exertions were made by that energetic officer to ensure the safety of Mr. Edgar's party, and to rid the country of the numerous raiders.

By the 7th February, the date on which General Bouchier rode into Cachar, the several detachments had reached their respective posts at Allynuggur, Chargola, &c., and the General felt that he had the frontier well in hand, and that, so far as the tea gardens were concerned, there was no further anxiety.

How to get at Mr. Edgar was a more difficult task, the only men on whom any reliance could be placed to conduct troops, had gone with him, so that no guides were procurable, and the boats, which had been sent up the Sonai with provisions, had returned twice to Cachar, the boatmen declaring that it was quite impossible to drag them up the river; delay, however, was fatal, and as the river route offered the best chance of success, General Bouchier determined on sending a small party up the Sonai.

The detachment left Cachar on the 7th February, it consisted of 120 men of the 44th Native Infantry, under command of Captain Lightfoot, whose orders were to hang about Looshai Hât until he could obtain some information of Mr. Edgar; on the morning of the 14th when within a few miles of his destination, Captain Lightfoot sent on some scouts with a letter to Mr. Edgar, these men returned to the bivouac in the evening, and reported that they were unable to proceed further, as the Looshais had placed a bamboo surmounted by a red flag in the middle of the river, and that any one passing this would be considered as an invader of the country; this was in reality the mark set up by the constables belonging to Mr. Edgar's party, but the scouts being fully impressed with the idea that the enemy intended to oppose any further advance, persuaded Captain Lightfoot to retire to Coolie Hât, some little distance down the river, where he proceeded to entrench himself.

Early on the 18th, the constables, Mr. Edgar had despatched two days before, reached Coolie Hât, and from them Captain Lightfoot ascertained that there was no chance of any opposition, whereupon he decided on sending half his men back to Cachar under Lieutenant Bourne, and pushing on with the remainder to Mr. Edgar's Camp.

Writing about the work performed by this detachment, General Bouchier remarked as follows, "a more unpleasant expedition, or I may say "a more dangerous duty, could not have been devised for, or more cheerfully undertaken by officers or men, the bed of the river sunk between "high banks was suffocatingly hot, dense forests on either side came "down to the river's bank, and half a dozen marksmen might have picked off every man; at this season the water was at its lowest, the bed "of the river being in many places not six yards wide, while the stream "was a succession of rocky torrents, pools and shallows, in fact the fleet "had to be literally dragged up the Sonai."

The Commander-in-Chief having inspected Dibrooghur and the other stations on the Brahmapootra, reached Cachar on the 24th February, when the question of the frontier defence was fully discussed. His Excellency at once saw the necessity for sending an armed force into the hills, but as the season was then too far advanced for any lengthened occupation of the country, it was decided that strong detachments of military and police should be thrown well forward, and that stockades, capable of holding the coolies and property of the planters, as well as the sepoys themselves, should be erected at Mynadhur, Monierkhal, Dowarbund and Julnacherra in Cachar; and at Allynuggur and Chargola in Sylhet; and that, in addition, roads of communication should be made between these posts.

The troops worked with a will, and in two months all the stockades were completed, and though the roads were not finished, good fair weather tracks had been cut.

All this time the local authorities were endeavouring to ascertain exactly which tribes were concerned in the numerous outrages.

The solitary raid in Chittagong was said to have been committed by Shindoos, who dwell on the east side of the watershed between Chittagong and Burmah, and could not be dealt with from Bengal.

Both from information given by Ruttun Pooea to the Deputy Commissioner of the Chittagong Hill Tracts, and from the entry in Mr. Edgar's diary when he was encamped on the Dullesur, it was tolerably conclusive that the raids in the south of Cachar, viz. at Alexandrapore, Chargola, &c. were perpetrated by the Sylhoos and Howlongs, tribes living to the north and north east of the Chittagong Hill Tracts, while the raids in eastern Cachar and Munnipore were clearly traceable to the sons of Vonolel, assisted probably by the people of Vompilal and Poiboy.

As to the raids in Sylhet and Hill Tipperah, the information was more doubtful, the Magistrate of the former district was of opinion that they were committed by people of Sookpilal, as two of his sons were recognized, and certain other followers of his sister Vanaitang, the wife of Gnurshailon, a Kookie chief, who now lives under the protection of Ali Ahmud, an influential Zemindar of Sylhet.

The Commissioner of the division and Mr. Edgar did not agree with this view, mainly on account of Sookpilal having been consistently friendly with the latter during the time the raids were being committed. The benefit of the doubt was eventually given to Sookpilal, for while his complicity in the raids on Sylhet and Hill Tipperah appeared quite possible, it was considered that, as he had behaved in such an admirable manner towards Mr. Edgar, and as it was very desirable not to make any false steps by punishing on suspicion, he should be treated as a friend and not as an enemy, in the event of a retaliatory expedition being undertaken.

The time had now arrived when it was necessary to decide what steps should be taken to punish the tribes concerned in these atrocious raids, to recover, if possible, the numerous British subjects in their hands, and to prevent a repetition of their incursions for the future.

It was felt that the injury to the tea interest was not confined to the actual raids, but that such a terror had been established in all the estates within reach of the Looshais, no coolies would willingly remain on them, and though some, who were bound by their contracts might be forced to stay for a time, they would never renew their engagements, and unless steps were taken for effectually checking the raids, tea planting could not be carried on.

Two Lieutenant Governors had urged that the aggressions of many successive seasons should be met by condign punishment, and had re-

commended the seizure of the crops, stored grain, &c., and the military occupation of the country for as long a time as possible, and now a third gave it as his opinion that "a visitation of some of these people by an armed force is absolutely necessary for the future security of the British subjects residing on the Cachar and Chittagong frontiers."

The several local officers were unanimous in their opinions as to the necessity of an expedition, and Mr. Edgar, who could speak with the authority of experience, and who had endeavoured most loyally to carry out the conciliatory policy, stated in his report: "If successful measures for the effectual punishment of offenders be taken next year, we can with safety carry out any policy we choose to adopt, and of course outposts and roads can do no possible harm; but a policy of defence not accompanied by punishment for past outrages, would, in all probability, result in failure."

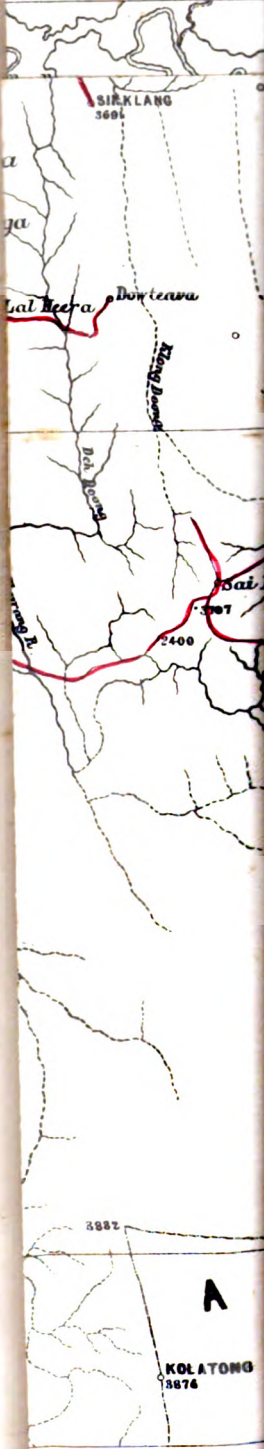
The Commander-in-Chief fully endorsed these views, and recommended that two columns should be despatched, one from Cachar, the other from Chittagong.

Anxious as the government was to hold strongly to the policy of conciliation and of personal influence, it could not but agree with the convincing arguments expressed by all the authorities who had been consulted; orders were accordingly issued for the preparation of two columns, and the opinion of the Government of India, as to the measures considered necessary to ensure the success of the expedition, was communicated by the Foreign Secretary to the Military Department, on the 30th June 1871.

Lord Napier of Magdala being fully impressed with the belief, that the many outrages perpetrated on British territory could no longer be allowed to pass unpunished, had addressed government on his return from the Cachar frontier, as early as the previous March, pointing out that, owing partly to the forces being too small and badly equipped, and partly to their being despatched too late in the season; mountain expeditions in India, of late years, had not been generally successful, and, as it was most important for the future peace of the frontier, and for the British prestige, that there should be no more failures in the Looshai country, His Excellency earnestly recommended that all details connected with the organisation and equipment of the force, and with the efficient supply of carriage, &c., should be carefully considered beforehand, so that nothing might be wanting to admit of the two columns starting from Cachar and Chittagong on the 1st November, complete in every respect.

On the 13th July the Commander-in-Chief was definitely called upon to submit his proposals for giving effect to the measures decided upon against the Looshai tribes, and on the 17th of the month His

93° 30'



23° 0'

H

A

M

22° 30'

A

R

93° 30'



Excellency forwarded his scheme to government ; the main features of which were :—

That each column should consist of a half-Battery of Mountain Artillery, one company of Sappers and Miners and 1,500 Native Infantry.

That whilst it was very desirable the Rajahs of Munnipore and Tipperah should co-operate in the expedition, the action of their troops should be limited to the protection of their own frontiers, and to the opening out of roads and maintaining communications through their own territories.

That no tents should be allowed, each fighting man being supplied instead with a waterproof sheet.

That baggage and followers should be reduced to a minimum and that every one should be rationed by the Commissariat.

The suggestions of the Commander-in-Chief having received the approval of Government, orders were at once issued to the several departments concerned, and by the beginning of September the fitting out of the two columns had been fairly commenced.

*(To be Continued.)*

---





## V.

## ON THE DEFENCE OF RAILWAYS IN INDIA.

—

THE importance of railway communication in a military point of view is so great, both in times of peace and war,—that any remarks, however crude, on the methods of assuring the maintenance of this communication must bear a value in proportion to the importance of the subject rather than to their own intrinsic merits. The subject is not a new one, though it has not been brought prominently forward in any way, and any suggestions that may have been made hitherto, have led to no other result than the formation of Railway Volunteer Corps, and the Castellated front of the Railway Station at Lahore; but these measures, however excellent in themselves fall far short of the object proposed; for if the railroad is to be kept in working order while it is protected at the same time, the volunteers will not be able to leave their legitimate duties of working the line, to take up the work of protecting the intermediate portions of railroad between the stations; and as regards the defensive power of the Lahore Railway Station, it is to be hoped that the occasion would never arise for placing our confidence in it, unless it has been much altered and improved in this respect of late years.

In considering the subject of the defence of Railways in India, the following heads naturally present themselves :—

Firstly, Are the defences to be permanent or temporary, during the time of disturbances; and secondly, having the defences, how are they to be manned?

Thirdly, How is the permanent way of the railroad to be protected, and what are the means for protecting the bridges and tunnels and cuttings on the line?

Fourthly. The organization necessary to make a railroad work under military authority during a time of war.

## PERMANENT DEFENCES.

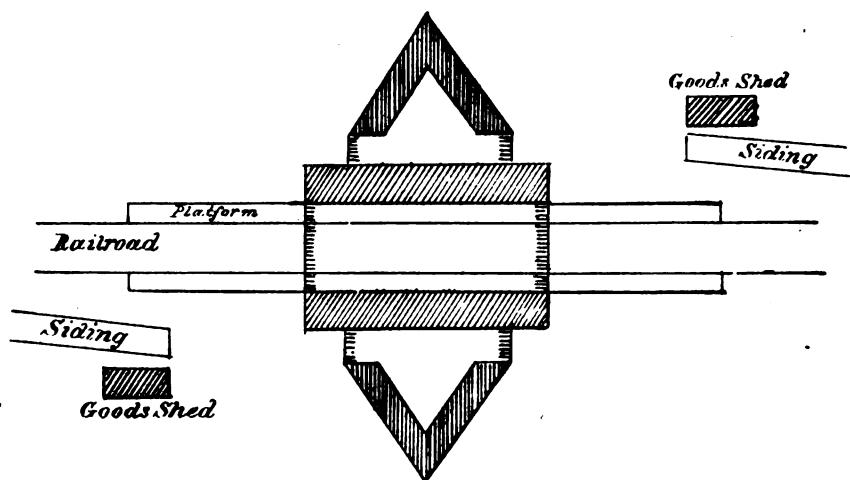
There is little doubt but that a line of permanent defensive positions along the railroad, forming so many fortified posts ready for use at a moment's notice, would materially add both to the security of the line, and as places of refuge to which in case of a disturbance people off the line would naturally flock. The advantage of such posts has already been shewn in the mutiny, though not in connection with a railway; but in those days there was no length of line laid down; the advantage of thus grouping these posts and having means of communication between each considerably adds to their value as material aid could be given without delay in case one happened to be attacked.

The stations all along the line of railroad should form these permanent posts, and the question arises, how is this to be done without interfering with the regular traffic on the line? The construction of Railway Stations has hitherto been left in the hands of the Railway Civil Engineers, who have directed their efforts to providing for the effective service of the line, but in a military point of view something additional is required to convert a station into a defensive post; and if this can be done without much expense, either in regard to new or old buildings, there ought to be no reason why such plans should not be carried out, especially as the safety of the line is almost synonymous with the internal peace of the country. As a chain is not stronger than its weakest link, it is necessary to have the links as strong as possible; now in the chain of railway military posts we must strengthen the smallest ones first as much as possible, as being from the fewer number of defenders available, the weakest points.

As a rule most stations, not first class ones, are built of strong masonry on both sides of the line, with fewer openings such as doors and windows, exteriorly, than interiorly on to the platform. The platforms themselves are often walled in, breast high, and are of a length to admit a train of the ordinary number of carriages to draw up opposite them. The water towers and coal merchandize sheds are beyond the platforms; the latter generally on a siding. This is a general description of most of the road side stations excepting termini and junctions. The two blocks of parallel buildings may be taken to represent the sides of a block house, but however strong these may be, the two open ends must be closed, if the place is to be defended. This could be done by having four heavy gates plated with sheet iron, placed at each end of the buildings, so as to swing across and fasten to upright pillars at the edge of the platforms. Between the lines of rails a stockade would be erected of strong timber, and on the outposts of this stockade, would be hinged barrier gates, which would swing across the line and lock into the platform and the pillar above mentioned. Thus protected on its exposed sides, a railway station becomes a strong position, only reducible by artillery fire or famine. The latter contingency with the posts at comparatively short distances, (the average distance between stations varies from ten to twenty miles) is never likely to occur, though it is possible that unless a well were placed within the line of buildings the want of water, in the event of the place being surrounded or access to the water tank being cut off, might prove a serious danger for a time. Every station therefore should be provided with a well or what would be a better arrangement the water-tower should form part of the buildings the platform and the water could there be pumped from the tank or other source of supply without the risk of the supply being cut off. A tower thus placed would form a capital observatory or signal station, by means of which constant communication could be held with the nearest posts, if the nature of the ground permitted it. As they are now situated, these towers are useless on account of their being beyond the defence.

Where tanks have been excavated and the loose soil has not been made use of in forming embankments, it has been left generally round the exterior of the tank, forming a very convenient and large shelter trench which an enemy attacking the post would be sure to make use of. This bank of earth should be removed on the side towards the station.

There are always a certain number of sheds and out-offices connected with a station; these are irregularly placed as a rule in convenient localities, but were they collected, in making a new station, into a redan covering the main entrance and exit on each side of the platform, leaving a space for a roadway along the front of the building, which would also be shut in by barrier gates, additional protection would be obtained at a slight cost, which the benefit of having the means of enfilading the sidings, and coal sheds would more than repay. As it is, these buildings, which are so placed that an enemy in possession of them would not easily be dislodged, require to be situated so that they can be seen through from end to end from the station itself, and if this be impracticable, the outlying redan becomes an absolute necessity.



#### *General Plan of a fortified railway Station.*

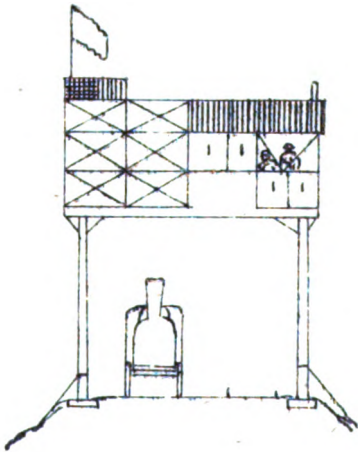
It will be observed that the whole of the barrier gates and stockade can be removed, which would always be the case during time of peace, so as not to interfere with the traffic on the railroad; but they should be stored so as to be readily got at and placed in position when required.

This general principle of making a station into a blockhouse would

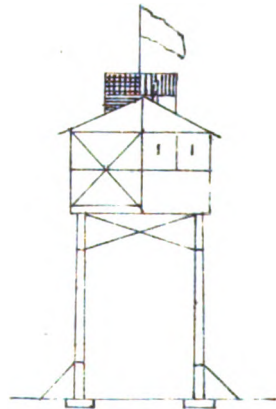
also be adopted in the case of termini, but owing to the larger number of buildings, and the presence of more defenders, it will be possible to occupy the most important of the outlying works on each side of the line, the buildings should be selected so as to flank each other, and at the same time, the fire from them should converge on an advancing enemy. It would be useless to attempt any further detail of the defence of a terminus without having a plan of the ground to be occupied, but this could be obtained with regard to the existing stations, and then the buildings which are to be occupied should be prepared as in the case of the road side stations, with removable barriers ready for defence.

#### TEMPORARY DEFENCES.

In addition to the stations, which form the permanent defences, are intermediate places on the line where the presence of a guard of more or less strength may be required; for this purpose, a temporary defensive position will have to be taken up. The best defence would be an iron block house raised on iron pillars across the line, by which means a great distance of the rail road could be observed, and signals transmitted from a signal tower. This kind of block house could be kept in store, and erected when necessary at a given place. It would be secure against everything except artillery fire. The block house shewn in the sketch would accommodate 16 men. Where circumstances prevented the erection of such a building, it would be possible to convert some old railway carriages into temporary posts; but except as barracks they would not be so useful, as they must be placed end on, at the side of the line, and they could thus bring but a small amount of fire on the line.



Side Elevation of an iron frame block house of half inch wrought iron plating. The plates and roof are shewn removed on the left to show the framing. The shutters on the right are shewn open, when not required to be in position.



End Elevation of iron block house; the shaded part of the signal platform is plated to protect the signaller.

The block house would be fitted with iron tanks for water, coals, provisions, and ammunition, which would be ranged along the sides to form seats. Hammocks would be slung when required, and a small cooking stove would be necessary. The floor is made of  $\frac{3}{4}$  inch iron plates, with loopholes in it so as to command the pillars. It has a trap door with a rope ladder for ingress, a light iron ladder leads to the signal platform.

#### THE NUMBER OF DEFENDERS FOR A LINE OF RAILROAD.

In calculating the number of defenders necessary for a line, we will take the E. I. Railway as an example. We find on examining the Time Table, that including the Jubbulpore and branch lines, there are 149 stations to be defended. These can be divided into four classes, according to the relative importance of the traffic and the consequent size of the stations. The first class include the railway workshops and termini, and are, Howrah, Jumalpoore, Allahabad, Cawnpore, Delhi and Jubbulpore. The second class are 10, *viz.* Burdwan, Ranee-gunj, Luckie Serai, Dinapore, Mogul Serai, Toondla, Allyghur, Gazeecabad, Sahibgunj, Sutna. There are 11 3rd class stations, Chaudernagore, Assensole, Muddapor, Buxar, Mirzapore, Etawah, Agra, on the direct line, Rampore Haut, Rajmahul, on the loop line, and Manickpore and Kutnee on the Jubbulpore Line, Azimgunj on the Nulhattee Branch Line, would be reckoned as a 3rd class station, but we are considering only the E. I. Railway at present.

The greater part of the Railway Officials and workmen reside at the principal stations, so that at some of the roadside stations there is not a resident European, but should the line ever have to be put in a state of defence, the railway volunteers would be told off to each station; The strength of the volunteers on the E. I. Railway is 780 rank and file. This number would be detailed as follows:—

|       |                      |   |        |   |     |
|-------|----------------------|---|--------|---|-----|
| 6     | First Class Stations | @ | 20 men | = | 120 |
| 10    | 2nd " "              | @ | 10 " " | = | 100 |
| 11    | 3rd " "              | @ | 6 " "  | = | 66  |
| 122   | 4th " "              | @ | 4 " "  | = | 488 |
| <hr/> |                      |   |        |   |     |
| 149   | Stations             |   |        |   | 774 |

This detail, which is at a minimum, leaves no margin for sickness and casualties. Now it is evident that 4 men could never defend a station, as well as carry on the railway duties, so it will be necessary to detail a military force as well. The number of men requisite for the purpose should be

|       |                     |   |         |   |       |
|-------|---------------------|---|---------|---|-------|
| 6     | First Class Station | @ | 100 men | = | 600   |
| 10    | 2nd " "             | @ | 40 " "  | = | 400   |
| 11    | 3rd " "             | @ | 20 " "  | = | 220   |
| 122   | 4th " "             | @ | 10 " "  | = | 1,220 |
| <hr/> |                     |   |         |   |       |
|       |                     |   |         |   | 2,440 |

Half this number of soldiers might be taken from the Native Army. Equally important with the stations, are the 3 large bridges on this Line of Railway. The Sone Bridge and the Jumna Bridges at Allahabad and Delhi each require a strong party for their defence, 50 men at each end of the bridge, would not be too many to hold them, there are other smaller railway bridges which require equal protection, but a smaller force at each protected by a block house would effect this object. The number of these bridges could be obtained if necessary from the Railway authorities. The military force therefore necessary for this line of Railroad is 2,440, as above detailed, to which must be added 300 men for the three bridges 10 per cent. or 250 men for sick, and an equal number for intermediate bridges and posts. This amounts to 3,240 men, which with the 780 E. I. Railway volunteers makes a total of 4,020 men, not including Officers, for the defence of the railroad, which has 1,420 miles of rail laid down; this gives a proportion of 2.82 men per mile or in round numbers 3 men per mile for the defence of stations and bridges.

#### THE CARE OF THE TRACK.

The numbers of men detailed above for each station would be enough to furnish patrols to inspect the line up half way points between each station, but the actual care of the line must be left in the hands of the native employés except in disturbed districts. Two men per mile in open country would be enough for this purpose especially if the land owners in adjacent villages were made responsible for the safety of the line, which indeed would have to be done, if entire security were to be obtained. Thus the intermediate portion of the railroad between stations, would be supervised by the patrols, and the Railway employés while these last would be carefully looked after in their own interests by the villagers.

In disturbed districts more men would be required; General McDowell in the American War\* laid down 12 sentries or 36 men per mile, not including posts of men in block houses when necessary; but it would be difficult in India to find the men if the disturbances occupied any extensive district, to keep up this number of sentries; we should probably have to use a smaller number; 6 sentries per mile, so that the men should be within hail of each other, would be as much as could be spared.

#### THE DEFENCE OF RAILWAY BRIDGES.

The protection of railway bridges from attack must necessarily form a serious consideration where all the material for their construction is imported. The large rivers of India, necessitating bridges, of over a mile in length across a dry sandy bed for the greater part of the year, are particularly exposed to an enemy and therefore the men who are detailed for their protection should be strengthened by field fortifications, with perhaps a couple of guns at each end of the bridge, and if the river be full of water, a gun boat would also be necessary, to prevent the piers be-

---

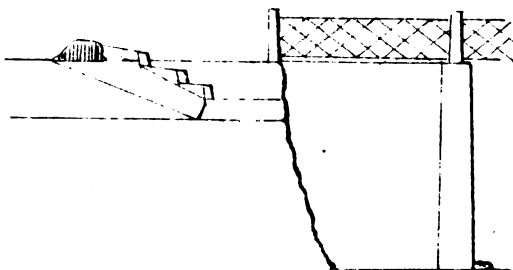
\* Handbook of Field Service, p. 281.

ing mined. The flanks of these tetes du pont must be defiladed from the raised permanent way of the line, if as usual, it approaches the bridge on an embankment.

Interior view of a defiladed tete du pont, with barrier.



Side Elevation of ditto,



The smaller bridges have guards told off for their protection, who would be located either in the temporary iron block house described previously, or in the old carriages placed at the side of the line.

#### DEFENCE OF TUNNELS.

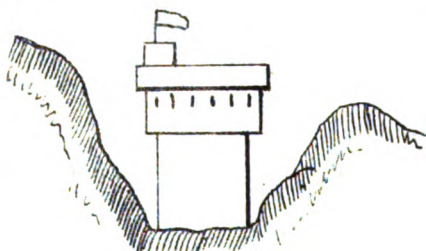
The defence of tunnels has never been attempted, but there is no reason why it should not be done. It is similar in principle to the defence of a defile, in which both the assailant and defender are on an equality, till the former find the means of either turning it in rear, or of commanding it on either flank. A tunnel is safe from this, and therefore should be held till the exit is in danger of being turned. It should then be blown up rather than let it fall into the hands of an enemy, who might make use of it, but this is a problematical thing in India, so it might be sufficient to barricade both ends of it with an iron-plated door pivoted on its centre, and capable of being securely barred from either side, into recesses into the walls. This plated-door should be strong enough to resist field artillery. There are however but few tunnels in India, and none of any great importance as to length and expense; to block them up temporarily when exposed to attack seems a preferable course to blowing them up to hinder our own traffic if there is no enemy to use them. It might be possible to turn such a barricaded tunnel into



a defensive post by loopholing the plated doors and putting some men inside, who would only require some lanterns to be as well off as the defenders of other block houses.

#### DEFENCE OF CUTTINGS.

The defence of deep cuttings could be provided for by iron block houses thrown across the line, the sides of the cutting should be scarped on a level with the block house to prevent an enemy firing into the loopholes from the sides.



#### SIGNALLING.

There should be an alternative method of signalling in addition to the Telegraph, the wires of which may be cut or its operations delayed from natural causes. A semaphore placed on the top of the buildings of the station, when the distances did not exceed twelve miles, or the flags used for army signalling when the distances are under that, would answer the purpose, but the instruction in working these signals should not be left till the line was under military authority, but should form a part of the education of a railway volunteer.

The organization of re-construction trains to repair any portion of the line which may have been destroyed from any cause, can also be included in the subject of the defence of railways.

The store of materials sufficient for the purpose should be kept up in stock at the principal stations, and specially set aside for this object. With a regular system, and organization, the task of laying down rails after they have been pulled up and destroyed can be proceeded with rapidly.

#### PREVIOUS PREPARATION NECESSARY.

To place a line of railroad in a state of defence, therefore, all the arrangements necessary to carry out the following suggestions, should have been previously carefully prepared, so that on the order being issued, everything should be in its place within four and twenty hours.



### RECAPITULATION.

1. Every station and railway bridge to have its barrier gates at each end put in their places.
2. The iron block houses to be erected where necessary as at the smaller bridges and cuttings.
3. The details of volunteers should proceed to their stations, to be followed by the military details as soon as possible.
4. The arrangements for the communications of signals should be perfected.
5. The re-construction trains should be packed and loaded ready for despatch when required.

When the railway is to be put into a state of defence, and thus come under military authority it will be necessary to have a responsible military officer in charge of it, who might be distinguished as the line commandant, while his subordinate officers who would be responsible to him would be the district and station commandants. The district commandants would have charge of ten or more stations, and would collect the reports from them for transmission, and by daily inspection or as often as the communication allowed, satisfy themselves that the system of discipline was properly carried out by the station commanders.

The line commandant should also perform the duties of director of railway transport, and regulate with the assistance of the railway authorities, the whole of the traffic on the railroad. All government stores should be consigned to him, and he would forward them in accordance with instructions received from army head quarters, organizing depots and entrepôts for stores at the most convenient places. At the terminus depot where the stores had to leave the line of railroad, a senior responsible officer should be in charge of the station, who would be in communication with the army head quarters. At both the base and terminal depots, there should be a sufficient staff of executive and subordinate officers from each supply branch of the service to look after the stores under the orders of the line and terminal station commandant. The line commandant, having charge of the traffic would be able to supply the rations necessary for the station garrisons along the line if the local sources even became insufficient for the purpose, but the district commandants would be answerable for the satisfactory victualling of the posts under their orders.

### THE NUMBER OF MEN REQUIRED FOR THE PRESENT RAILWAY SYSTEM IN INDIA.

From the proportion given of the numbers of men required for the defence per mile, we can calculate the number necessary for the railroads now open in India. There are now close upon 4,000 miles count-

ing every line now existent, which will be shortly increased, this would require a force of 12,000 men, of whom one-fourth would be railway volunteers. It may indeed be assumed that all these lines would not be put into a state of defence at once, but as the majority of the lines start from the sea coast or close to it as at Calcutta, it is necessary that they should be protected, as the sea coast is our base of operations.

#### EMPLOYMENT OF MITRAILLEURS.

The defensive powers of all the stations and posts would be much increased by the use of Mitrailleurs, but their employment would not warrant any reduction in the strength of the various garrisons of stations as given which indeed could hardly be reduced.

#### EMPLOYMENT OF CAVALRY AND OF FIELD ARTILLERY.

No mention has been made of the employment of cavalry to assist in the patrolling of the line, of course where they were available their services in this respect could be made use of with advantage. No doubt also field artillery would enter into the defence of the larger first class stations, but as its employment would depend upon local considerations rather than general ones, the subject has not been touched on.

#### CONCLUSION.

In conclusion, there is no doubt that before we can rely on our railroads as a certain means of transport in time of war, some if not all of the points glanced at in the foregoing remarks must be taken up, with a view to these being carried out practically, when the occasion may arise ; it may never come, or it may come soon, but to be ready for it, is to ensure the success of all operations depending on the safety of railroads.

COPENHAGEN.

## VI.

### ARMY SIGNALLING.

#### PART II.

ON the introduction of the Electric Telegraph, the old and clumsy Signalling Semaphores which existed in different parts of England were done away with, and for a long time the practice of signalling with Visual Apparatus was discontinued, except in the Navy or at stations on the coast when and where it was necessary to signal the arrival of ships, or give notice of the approach of bad weather.

However the rapid strides which have been made in Military Strategy, Tactics, and the Art of War necessitated a re-adoption of the old style of signalling re-adapted for use in the field, or under such circumstances as when the telegraph was unavailable, or by the accidents of war rendered useless for the transmission of messages.

Although a system of army signalling has been taught at home for some time past, still it was only last year that it was introduced into this country, and schools of instruction established in the different presidencies for the training of officers and men, shewing that Government recognized the advantages of a system of signalling without elaborate apparatus which would supplement the electric telegraph, which (as Sir Garnet Wolseley says in his "Soldier's Pocket Book,") page 318 "is so liable to constant interruptions during war," and which also can be utilized as a system of signalling by itself.

Little or nothing has been written on the subject, and, as I believe that little is known of the system of army signalling amongst the officers of the Indian Service, I trust that this effort of mine to detail the system now in use, will be the means of bringing the subject more generally to notice and of leading to the improvement which it is sadly in want of.

For the information and guidance of those who have not been through a "course of instruction," I shall detail at the request of the Council as minutely as possible every thing that is known of the system at present in use in our army, and with a view to simplicity will divide this paper into 3 parts, namely—

Part I. The System now in use.

Part II. The Code, Alphabet and Auxiliary Signs.

Part III. Flags, and how they are used.

In each part I shall give the changes and modifications, which I would venture to suggest as worthy of trial, with my reasons for the same. Since writing this paper, I have had an opportunity of reading the despatches of Brigadier-Generals G. Bouchier, C.B., and C. H. Brownlow, C.B., Commanding the columns of the "Looshai Expedition," and see with great pleasure that General Brownlow testifies to the im-

portance of "Army Signalling" (with flags) in Para. 19 of his despatch, dated Sylhoo Savoong, 29th January 1872, and for those who may not have an opportunity of reading it, I do not think it will be out of place to quote it here. (*G. O. Military Department, 27th April 1872.*)

"I must bring to his Excellency's notice, the very great assistance " I have derived from the new system of Army Signalling with flags. " On many occasions I have been able to send instructions to detached " parties and posts at distances of ten and twelve miles, and to receive re- " plies in a few minutes, which otherwise must have taken three or four " days in transmission and have given extra and trying work to the troops " detailed for carrying orders. It appears to me in mountain cam- " paigns in this country, the system of Army Signalling when properly " carried out, must be of the very greatest utility, and I venture to ex- " press an opinion that every British Officer should learn it as part of " his drill, and that an apparatus for night signalling under a specially " qualified officer, be attached to every expedition, that may in future " take the field."

---

## PART I.

### *The Systems now in use.*

The great beauty of our English system is its simplicity, and I think it will help the reader if he will remember first, that it is known as

"The Flashing system;"

and secondly, that it consists of two signs only, called respectively, a dot, and a dash.

The dot being a short appearance, motion or sound produced by any object or apparatus, and is written on paper = thus.

The dash is a long or longer appearance, motion, or sound produced by any instrument, and is represented on paper — thus.

All the Numbers, Alphabets and Auxiliary Signs in use being only combinations of the above mentioned, *vide* Plates, I, II, III and IV.

Bearing this in mind, I will now proceed to explain how these Signs, or symbols as they are more generally called, are formed.

The Code Books says: "In some instances the object is made to appear and disappear as with a flashing light, or with collapsing cones and revolving discs, or in others to change its positions as with a flag, so that one position, shall represent the disappearance and others, the appearance."

The disappearance I have described throughout as the normal position A, as from it the movements are commenced.

# ARMY SIGNALLING.

PAPER No. II.

## PLATE I.—NUMERAL AND AUXILIARY SIGNS.

|                    |   |      |   |
|--------------------|---|------|---|
| dot                | — | dash | — |
| <i>Numerals</i> —1 | — | 6    | — |
| 2                  | — | 7    | — |
| 3                  | — | 8    | — |
| 4                  | — | 9    | — |
| 5                  | — | 0    | — |

|                           |     |                              |
|---------------------------|-----|------------------------------|
| <i>Auxiliary</i> —Compass | ... | —                            |
| Pendants                  | ... | —                            |
| Numeral                   | ... | —                            |
| Repeat                    | ... | —                            |
| Horary                    | ... | —                            |
| Interrogative             | ... | —                            |
| Negative                  | ... | —                            |
| List of the Navy          | ... | —                            |
| Geographical              | ... | —                            |
| Alphabetical              | ... | —                            |
| Preparative...            | ... | —                            |
| Stop                      | ... | —                            |
| General Answer            | ... | —                            |
| Erasure                   | ... | ... Flag waved horizontally. |

## PLATE II.—NUMERAL ALPHABET.

Preparative ... — — — — — Spelling prefix ... — — — — —

|                      |                             |                   |                |              |
|----------------------|-----------------------------|-------------------|----------------|--------------|
| 1<br>Understood<br>— | 2<br>Not<br>Understood<br>— | 3<br>Numeral<br>— | 4<br>Wait<br>— | 5<br>A<br>—  |
| 6<br>B<br>—          | 7<br>C<br>—                 | 8<br>D<br>—       | 9<br>E<br>—    | 10<br>F<br>— |
| 11<br>G<br>—         | 12<br>H<br>—                | 13<br>I<br>—      | 14<br>J<br>—   | 15<br>K<br>— |
| 16<br>L<br>—         | 17<br>M<br>—                | 18<br>N<br>—      | 19<br>O<br>—   | 20<br>P<br>— |
| 21<br>Q<br>—         | 22<br>R<br>—                | 23<br>S<br>—      | 24<br>T<br>—   | 25<br>U<br>— |
| 26<br>V<br>—         | 27<br>W<br>—                | 28<br>X<br>—      | 29<br>Y<br>—   | 30<br>Z<br>— |

Stop or End of word — — — — —

Nos. 1, 2, 3, 4, are not used with the Navy.

Naval Answer ... — — — — —

### PLATE III.—THE MORSE ALPHABET.

|   |     |     |   |   |   |     |   |   |
|---|-----|-----|---|---|---|-----|---|---|
| A | ... | ... | — | — | N | ... | — | — |
| B | ... | ... | — | — | O | ... | — | — |
| C | ... | ... | — | — | P | ... | — | — |
| D | ... | ... | — | — | Q | ... | — | — |
| E | ... | ... | — | — | R | ... | — | — |
| F | ... | ... | — | — | S | ... | — | — |
| G | ... | ... | — | — | T | ... | — | — |
| H | ... | ... | — | — | U | ... | — | — |
| I | ... | ... | — | — | V | ... | — | — |
| J | ... | ... | — | — | W | ... | — | — |
| K | ... | ... | — | — | X | ... | — | — |
| L | ... | ... | — | — | Y | ... | — | — |
| M | ... | ... | — | — | Z | ... | — | — |

### PARTICULAR SIGNALS

|                |     |     |     |     |     |     |          |
|----------------|-----|-----|-----|-----|-----|-----|----------|
| Understood     | ... | ... | ... | ... | ... | ... | T.       |
| Not Understood | ... | ... | ... | ... | ... | ... | I.M.I.   |
| Full Stop      | ... | ... | ... | ... | ... | ... | S.Q.     |
| Wait           | ... | ... | ... | ... | ... | ... | M.Q.     |
| End of Message | ... | ... | ... | ... | ... | ... | P.Q.     |
| All Right      | ... | ... | ... | ... | ... | ... | R.R.     |
| Erasure        | ... | ... | ... | ... | ... | ... | E.E. &c. |
| Preparative    | ... | ... | ... | ... | ... | ... | A.A. &c. |

### PLATE IV.—ABBREVIATED LIST OF SIGNS.

|                 |     |     |   |   |   |
|-----------------|-----|-----|---|---|---|
| Compass         | ... | ... | — | — | — |
| Station or Ship | ... | ... | — | — | — |
| Numeral         | ... | ... | — | — | — |
| Repeat          | ... | ... | — | — | — |
| Horary          | ... | ... | — | — | — |
| List of Navy    | ... | ... | — | — | — |
| Geographical    | ... | ... | — | — | — |
| Preparative     | ... | ... | — | — | — |
| General Answer  | ... | ... | — | — | — |
| Erasure         | ... | ... | — | — | — |
| End of Word...  | ... | ... | — | — | — |
| End of Message  | ... | ... | — | — | — |
| Alphabetical    | ... | ... | — | — | — |

### FOR FIELD ELECTRIC TELEGRAPH.

|            |     |     |   |   |   |
|------------|-----|-----|---|---|---|
| Erasure    | ... | ... | — | — | — |
| Understood | ... | ... | — | — | — |
| Not        | ... | ... | — | — | — |



POSITION A, SIGNALLING, FROM LEFT



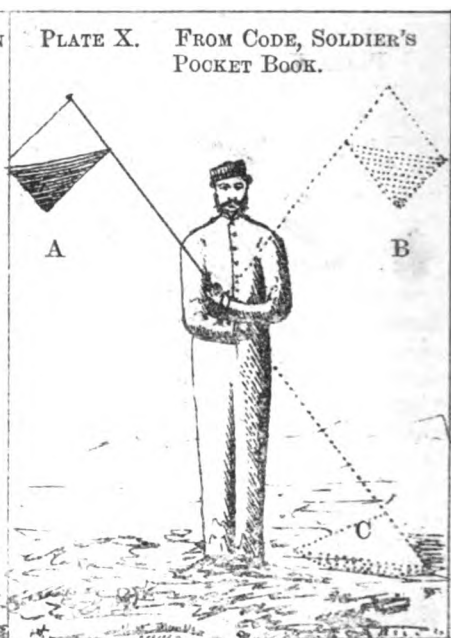
POSITION B, THE DOT



POSITION C, THE DASH



FLAG FOULED, draw the flag backwards before raising it from Position C, or it will foul as above.



POSITION B, THE DOT ... —

POSITION A, SIGNALLING FROM THE RIGHT.

PLATE XI.

A CODED MESSAGE.

FROM PENDANT 1 TO PENDANT 6

| Pendant 6    |        |     |             |  |
|--------------|--------|-----|-------------|--|
| 1609         | ...    | ... | Enemy       |  |
| 2951         | ...    | ... | approaching |  |
| 3764         | ...    | ... | in force    |  |
| Numeral Sign | 5,000  | ... | 5,000       |  |
| 976          | ...    | ... | Cavalry     |  |
| Numeral Sign | 20,000 | ... | 20,000      |  |
| 635          | ...    | ... | Infantry    |  |
| Compass Sign | 20     | ... | S. S. W.    |  |
| 9835         | ...    | ... | of          |  |
| Geographical | 5822   | ... | Pekin       |  |

Enemy approaching in force, about 5,000 Cavalry 20,000 Infantry S. S. W. of Pekin.



"The symbols are determined by successive appearances and disappearances at regulated intervals, constantly recurring after a fixed pause in a manner precisely similar to those of revolving or flashing lights in light houses. Signals made on this principle are therefore, scrutinized, as long as may be necessary to make quite sure of their purport by comparison with the codes (Code Book) before they are answered."

The two (2) symbols are known as dots and dashes, long and short flashes, long and short sounds, but I shall always use the first named, as they are always represented so on paper, namely dots and dashes, and I think it would be better if the other terms were done away with. The Code Book speaks of them as "Flashes." These two symbols being decided on, alphabets, signs, &c. were easily formed by combinations of them, and although much has been done to render the same as simple as possible still there is great room for improvement.

The apparatus and instruments laid down for signalling in the Navy and Army consist of two descriptions, Visual and Sonorous.

The first includes, Revolving Shutters, or Discs, Collapsing Cones, Bannerols or Flags, and jets of steam by day and by lamps or lights by night.

The second consists of fog horns, steam whistles or bugles.

The system of Army Signalling is intended to give every facility in keeping up communications between outlying pickets, advance or rear guards, and the main body of an army, or between divisions acting on the flanks where it is inadvisable or impossible to bring the Telegraph (field) into use.

"The importance of proper arrangements for transmission of order and intelligence by means of signals is very great, and the selection of "signal stations," (which it is necessary to be constantly changing according to the movements of friendly and hostile forces) "is one of the most important duties which can engage the attention of the Army Signaller, as upon the skill with which accidents of the ground are made available will depend in a great measure the speed and certainty with which information can be conveyed.

I shall speak more of this subject under "Instruction of Officers" in another paper. We may sum up our system, I think, by saying that by a simple arrangement of letters, words and sentences, we are enabled to send messages long distances with great celerity by means of portable and unelaborate apparatus, and place detachments in communication with Head Quarters, gain intelligence of the enemy by advanced posts, and thereby render the movements of our forces more secret and our troops less liable to be taken by surprise. Mounted men were formerly

employed in carrying messages, but as Sir Garnet Wolesley says: " sending messages by them is always liable to accidents and at best is but a tedious process. At times circumstances may preclude the possibility of doing so."

For instance, we could communicate now with a fort or city which might be surrounded by a besieging army, and arrange a combined attack without the knowledge of the enemy. The greatest skill and caution being required in fixing your Signal Station unseen by the hostile force, and every precaution taken to prevent them finding you out. Even then we can avail ourselves of our cypher system of which I shall speak in Part IV. (This has already been published in Journal No. 6) Original Papers No. II.

---

## PART II.

### SECTIONS.

- I. The Code and Numerals.
- II. „ Alphabets.
- III. „ Auxiliary Signs.

---

### SECTION I.

Nothing more admirable in compilation can well be imagined than the arrangements of letters, words and sentences in the Code Book, and of course wherever available except in the presence of an enemy who might possess a key to it, would always be used, on account of the great rapidity with which messages can be sent by it.

" With a view to simplicity numbers have been taken as the basis for signalling," and the " code has been so arranged as to permit of any " word or sentence being translated into code numbers. It has been " compiled especially for the purpose of establishing a means of communication between the ships and boats of H. M. Fleets and H. M. " Troops or Signal Stations on shore. It has been made to comprehend " the whole of the signals, for Boat Service in H. M. Fleets. It also " comprises a large number of set sentences, as are likely to be found useful in military movements so as to form a Signal Book for general use " in the army."

The above shows that the Code Book was designed more for the use of the Navy than the Army, and I think there are an immense number of very necessary military sentences which might be added to it with advantage. The arrangements of the letters, words, etc., are so perfect that I think any one with half an hour's study could use the book in signalling with the greatest ease.

The book must be seen to be understood, and as it is secret and only in the possession of a few, it is only necessary for me to explain that it contains a *Numeral Compass Table*, having all the points of the compass numbered. A *Horary Table* with all the hours and minutes numbered. A *List of Navy*, each ship being represented by a number, and a blank "*Geographical Table*" in which places can be entered according to circumstances. More on this subject will be found under Section III. Auxiliary Signs. The numerals 1 to 0, the basis of the Code Book, will be found at Plate I.

## SECTION II.

### *The Alphabets.*

As before stated the Code Book is only in the possession of a few who are responsible for its safe keeping. It therefore became necessary to devise an Alphabet with which Signalling could be carried on independently of the book or when it could not be used.

For this purpose the Numeral Alphabet *vide* Plate II. was arranged. It is very simple and one not likely to be forgotten :—

1. *Understood*, given to show that you have received a word correctly.
2. *Not Understood*, of course the reverse, which being given, the word has to be repeated.
3. *Numeral*, meaning that the figures following it are to be read as a number and not as a word.
4. *Wait*, not used at all.
5. *A.—Z.* 30.

Plate III. represents the Morse Alphabet which is almost universally used for the Electric Telegraph, but has only lately been tried for Army Signalling with visual apparatus.

Plate IV. shows the alphabet in use on the Railways in this country but a visual apparatus has yet to be invented to which it could be applied.

As the great aim in army signalling and telegraphy is simplicity I see no reason for retaining two alphabets where one would do. I am decidedly in favour of the Morse for the following reasons :—

- 1st. Some, if not most of our signalling stations, will be in communication with the field telegraph, where the Morse will be alone used.
- 2nd. Its letters are represented by signs which are not nearly so confusing as numbers, as in the numeral alphabet.

In signalling with the Numeral, one is very apt to read out the signals as numbers not as letters ; for instance, 22 instead of R, and if not in practice, it is difficult to divest oneself of the idea that the signal is a number and not a letter. I have seen this occur over and over again, and any army signaller knows what takes place if you get in the very slightest degree confused or hesitate a second in your own mind as to what the signal is. While you are puzzling, you receive another letter, your guess at the former is most likely wrong, and you are obliged to call for a repeat. This tends to create a want of confidence in yourself.

I do not say that this is likely to occur to any one in good practice but as officers and men are liable to have to signal, who have not handled a flag for months, it is better that they should have as little as possible to remember, and that little as clear and simple as can be.

Again I have compared the two alphabets, and find that the Morse has (41) forty-one dots less than the Numeral which has in return (23) twenty-three dashes less than the Morse. If we take the letters of more frequent occurrence such as E. I. S. H. T. M. O. A. N. R. D. U. K. we find the difference more striking, namely :—Morse (30) dots less against Numeral (8) eight dashes.

But against this I have been told that a message was sent to an intermediate station by the Morse and passed on by the Numeral, and that the latter beat the former in rapidity, and then taking into consideration that you are never likely to forget that A is 5 from which you at once number the alphabet, something may be said in favour of the Numeral.

However I am of opinion that it should be done away with and the Morse retained, and then there will only be one alphabet which can be used with either the Telegraph or Signalling Apparatus.

Since writing the above, I see that Mr. Mance has applied the use of the Morse alphabet to his "Invention," (see paper on the Heliograph in Journal No. 5), which should decide in favour of its being retained in preference to the Numeral or Flashing Alphabet.

In the Morse, all numbers are spelt, so the Numeral sign is not necessary as with the code or Flashing Alphabet—this sentence comes more properly under the head of Auxiliary Signs.

### • SECTION III.

#### *The Auxiliary Signs.*

These signs will be found represented at Plate I.

1. *The Compass Sign*, refers to the compass table which has all the points numbered, for instance, should the compass sign be given and

then a number, you look for the latter in the table, say 27 which is E. by N. ? Quarter points being shown by 1, 2 and 3.

2. *Pendants.* Is the sign for a station or ship, and is always used when the signalling is to commence, and is followed by a number or a letter denoting the station to which you wish to signal.

Every station has a number or is lettered.

3. *Numeral.* Means that the number following it is to be read as a number and not as a group of figures in the Code Book.

4. *Repeat.* Speaks for itself.

5. *Horary.* Is the sign for time. The Horary Table has the 24 hours A.M. and P.M. numbered, so you look for the number which follows the horary sign, say 15, which you will find means 3 A.M. supposing 45 to have followed 15, it would have meant 3-45, A.M. the third and fourth figures always representing minutes.

6. *Interrogative.* } Only used in the Navy.  
7. *Negative.* }

8. *List of the Navy.* The numbers which follow the sign "List of Navy" must be looked for in the Code Book, and will be found to represent or give the name of one of H. M. Ships.

9. *Geographical.* This refers to a blank table in the Code Book which is numbered for filling in according to circumstances. On the commencement of a campaign, the Commander-in-Chief would name a number of places in the country in which the force was about to act, to be entered in this list which can be augmented or changed from time to time according as the positions of the armies carry them into new countries.

10. *Alphabetical.* Is the sign given when the signalling is to be carried on with the Numeral Alphabet instead of the Code.

11. *Preparative.* Is the first signal given to show the position of your station and is continued until one or all of the other stations you wish to communicate with give the

12. *General Answer.* Which is the sign that they are ready. This is the sign also that the signal it replies to is understood.

13. *Stop.* I have only seen this as a sign for "End of Message."

When you wish to signal with the Morse instead of using the above "Preparative" you use a succession of dots and dashes.

14. The erasure or rub-out cannot be represented on paper, but is made by lowering the flag and waving it nearly horizontally in front of the body, and shows that you are about to give the group of figures or the word over again as you have made a mistake in signalling it.

The Morse alphabet also has (8) eight auxiliary signs including the preparative already mentioned, namely (*vide* Plate III.)

1. *Understood.* Given after each word.
2. *Not understood.* Given after any word not understood.
3. *Full stop.* Used to divide a message.
4. *Wait.* I have never seen it used.
5. *End of message.*
6. *All right.* Never used that I know of.
7. *Erasure.* For mistakes.
8. *The preparative.* For calling up a station.

Plate IV contains an abbreviated list of auxiliary signs which appear to me all that are necessary.

Interrogative and negative being only used in the Navy, I have struck out for army signalling. The general answer will take the place of the Morse "understood." As it is an understood thing in signalling code messages that if the general answer is not given, the group is to be repeated. I do not see why there should be any necessity for a "not understood" in Morse, or at all events, why it should be such a complicated one, *vide* Plate III. Two (2) E's would suffice under any circumstances and one (1) E for understood.

"Full stop" is not often, if ever absolutely necessary. "Wait" and "all right," I have never seen used so imagine they might be struck out with advantage. "Erasure" is better shown by the horizontal motion across the body than by a succession of dots, but the latter ought to be retained for use with the Electric Telegraph. I think the ordinary preparative would do. As in the Railway alphabet, Plate IV. the I and T. are represented by one sign and so also U. and V. Why should not this also be done in the Morse? I would then make the present Morse V the sign of "end of word" and the letter T. the "end of message." The present "end of message" is a very elaborate sign almost too much so for visual signalling.

I would suggest that the words in signalling by the Morse should be numbered as the groups of figures are in code messages, then you could always ask for a particular word which you might not have received correctly, by giving the repeat and its number at the end of the message.

Signalling by the electric telegraph may necessitate these numerous signs, but I have not had any experience with it. I trust any one who has will point out any errors I may have made.

I have gone entirely on the principle that new or extra signs only

tend to complicate a system which should be as simple as possible, and in proof of what I mean, I will mention that it was quite a common thing to hear "Ah! there's so and so giving the general answer instead of the understood," or the same expression relative to using signs with the Morse which should only be used with the code.

I should have mentioned that none of the auxiliary signs except those after the alphabet in Plate III are used with the numeral or Morse alphabets.

If the numeral alphabet is done away with as I propose, the preparative would always be the same, the alphabetical sign after pendants showing that the Morse was going to be used.

Why we require two sets of signs to represent the same thing as in the case of the Morse particular signs (*vide* Plate III), which are already given in the code by much simpler signs, I cannot see and for that reason have struck them out. However I may be wrong. Taking into calculation the numeral alphabet to be done away with and the Morse to be retained, the army signaller would now have only to master (47) Forty-seven signs, *viz.*—

|                      |                 |        |
|----------------------|-----------------|--------|
| Numerals             | (10) Ten        | signs. |
| Morse Alphabet Signs | (26) Twenty-six | "      |
| Auxiliary Signs      | (11) Eleven     | "      |

(*Excluding 2 letters of Morse.*)

In place of (84) Eighty-four signs.

|                  |                 |   |
|------------------|-----------------|---|
| Numerals         | (10) Ten        | " |
| Numeral Alphabet | (30) Thirty     | " |
| Morse Alphabet   | (32) Thirty-two | " |
| Auxiliary Signs  | (12) Twelve     | " |

You cannot have too few signals, and you cannot learn those few too well. You never know when you may be called out for signalling purposes, and as you get little or no practice after you have passed through the course, the less, for the real service you will be as an army signaller, you have to remember, the better. At Plate IX is a sketch of a mounted signalman.

Mounted signalmen would always be utilized for Flying stations in preference to foot soldiers, their movements being so rapid, that they are far less liable to be cut off.

Although signalling has been carried out on horseback, still I should think the strain to both horse and man would be so great as to render it impossible to continue it for any time.

I shall refer to this subject again under the head of "signal stations" in next paper.

### PART III.

#### SECTION 1.

##### *Banneroles or Flags.*

##### Plates V. to X.

Flags I look on as the principle and most important day apparatus used in army signalling, and certainly most applicable to India; there being only one condition in which there is the slightest difficulty in signalling with them and that is in a high wind. But it must be blowing very strong indeed, to prevent a really careful signalman from using his flag with some degree of certainty. I have seen signalling carried on when you could hardly hold the flag at position A at all, and yet with a few mistakes the signals were given and answered.

The flags are 4 feet square and 3 in number.

1 is wholly white

2 „ „ black.

3 „ half black and half white, see Plate X, (diagonally).

The first is used against a dark back ground.

„ second „ „ „ light „

„ third „ „ „ mixed „

More on the subject of back grounds will be found in Part V.

The staff is made out of a common bamboo about an inch in diameter and (7) seven feet long. I have had made up the set of three flags of dungeree, dyed, with poles, etc, for under two rupees (2).

As there cannot be any disappearance with a flag, a nominal position A (Plate V) has been fixed on to represent it. By moving the flag across the body to position B, Plate VI, and back again to A we form the dot —.

By waving it to position C, hesitating a moment, and then bringing it back to A we form the dash — Plate VII.

Each figure and each letter or sign must be made by a continuous wave of the flag always finishing at the normal position A. By stopping before finishing one of the above, you will give a wrong signal, for instance :—You want to send (83) but instead of giving a slight pause after — — which by reference to the numerals you will find



represents 8, you go on at once with three more dots --- which mean 3 by themselves, but being joined to 8 makes you appear to have given --- which being the numeral sign, what follows it, as before stated, is to be read as a number. You proceed with a 2 and then a 5. Now the consequence of your mistake is, (it must be remembered that the code is being used) that instead of your having signalled 8325, a group of figures bearing a certain meaning in the Code Book, you have simply given 25 as a number.

Now with flags, with ordinary carefulness after having once learnt how to wave them properly, you can reduce the chance of this occurring to a minimum which is a matter of the greatest importance. In all other signalling apparatus, the dash is only distinguished from the dot by a longer exposure or sound which it stands to reason will render mistakes more liable than with flags where they are distinguished by a different motion which catches the eye so much quicker than the other. It may be a little slower but it is more certain. Our great aim should be to have a system so simple that officers and men take it up at any time at once, being prepared to read signals in the field without previous practice.

It must be apparent to all that it will require far greater practice to read correctly or even signal with certainty with apparatus which can only distinguish the dash from the dot by a longer appearance of the same object as required for the dot, than with apparatus as a flag where it is distinguished by a different motion.

With practice of course you can do anything. Stand by a telegraph clerk as he is signalling your message, and although you may know the alphabet, you will find you can't even follow the first word. Ask him how long it will take you to learn to read or signal and he will tell you about three months, if you work very attentively and then you can only keep it up by constant and daily practice and yet the short and long clicks of the Electric Telegraphic Instrument seem clearer than the short and long appearances of our army apparatus.

As a specimen of signalling with flags in this country, and the celerity with which it can be carried on, I will quote an afternoon's work from my note book.

There were three ranges of hills and a station on each. No. 1 was on the farthest range about (16 or 17) miles off. No. 2 was (10) miles from No. 1, and No. 3 was close to a large garrison camp. No. 2 was established as an intermediate station, No. 1, and No. 3 not being in sight of one another and consisted of 6 men as far as I remember, 3 for taking down and 3 for passing on the message.

No. 1 sent us, No. 3 a message (Code Book) consisting of (14) fourteen groups of figures. We replied with one of (4) four groups. To this we received a final answer of (4) four groups.

Taking the time when we first saw No 2's signals and supposing they were sending on the message as fast as they got it, to the time we received the last group of the final message, 12 minutes elapsed.

Thus 22 groups of figures were sent over a distance of 48 or 50 miles through an intermediate station in less than a quarter of an hour, which I think testifies to a certain extent to the value of flags.

---

## SECTION II.

### *Signalling.*

I will now proceed to explain how messages are coded, how signalled either in Code Numerals or by the Morse Alphabet, how received, and lastly how sent on by the nearest station to head quarters by hand if no electric telegraph is available.

At Plate XI, I have given a specimen message taken from my notes, the numbers of course being altered and entered at random. We will suppose station 5 is signalling to station 1 you first enter at the top from pendant 5 to pendant 1.

Then as the first column represents all the signals you send, you enter Pendant 1 at the head of it, proceeding with your groups of figures taken from the Code Book. You then write out the individual meaning against each group in the second column. I ought to have said first of all you write out the intended message in the blank space to the right of the form.

You then number the groups, from the top, being especially careful always to enter and correct the pendant of the station you are signalling to as the first group. This is done, in case of your being called on at the end of any message to repeat any word.

In receiving a message of this description you proceed in exactly the same way, entering the groups of figures and then looking up the meaning, if correct, entering it in the second column, and lastly if you have received it all right, entering the whole message in full in the right.

Messages can be shortened with a little practice in coding, and should be abbreviated as much as possible without interfering with the true meaning.

I find in my notes a specimen message of 226 groups of figures cut down to 158 thereby making a saving of 68 groups.

Still it should not be attempted except by those who are in first rate practice.

I would propose small telegraph cards, on which by the aid of the Cryptograph the messages might be written out in cypher, if there was any danger of their falling into the enemy's hands.

A pocket book 7 inches by 4 is the most useful size for taking down messages in. Draw two columns length-ways and enter your groups of figures, etc. Initial each message when it is finished and sent off, and your book will always be your voucher. At the end of each day, all the pages used should be cut or torn out and sent to A. Q. M. G.'s of divisions to be filed.

In using the Morse, you simply write out your message clearly in your book so that any one of the signallers with you could read it.

Each station consists of not less than two (2) men, sometimes 3 and even 4 men. If there are four, their duties are as follows. It must be remembered that I am speaking now of signalling with flags.

*No. 1.* Waves the flag.

*No. 2.* Reads the distant signals with or without the telescope.

*No. 3.* Looks out the figures in the Code Book as they are called out by No. 2.

*No. 4.* Writes down the meaning called out by No. 3, when if correct, he tells No. 1 to give the general answer.

If there should be only 3 men, No. 3 takes No. 4's duty.

If only two men, No. 2 takes No. 4's and No. 1 takes No. 3's duty.

With the Morse No. 3 is dispensed with. If there are only two men No. 1 takes No. 4's work and very easily.

When first you arrive on your ground, No. 1 gives the preparative continuously pausing to rest now and then, whilst No. 2 is scanning the horizon, as signal stations are generally on high ground, or the landscape until he finds out the station he wants to correspond with, when he calls out to No. 1, who will at once go on giving the general answer, until No. 2 calls out that the other stations is giving it too, which is the sign they have found you out. You are now prepared to give your message, but you first give the pendant sign and number of the station you have to correspond with. If they acknowledge the number, you know it is all right, and you can go on and give the first group of figures if it be a code message, or the first word if it be with the Morse alphabet. After each group or word you drop the flag in front of you, and wait until No. 2 calls out that they have given general answer, when you go on with the next, if they don't give the G.A. you must repeat the group or word after a short interval, and so on, till you come to the end, when you give the sign of "end of message." If they reply with G. A. you know they have received the message correctly, you give them their pendant and number

again, which being acknowledged finishes that message. When you have received a word or group twice or thrice and cannot make sense, give the G. A and go on with the message, but if after they have given "end of message" you still can't make it out, call them up with the preparative sign, then give them their pendant sign and their number, follow it with the repeat, and the number of the group or word. When you receive the repeat you must carefully look up the group if it be a code message and compare the number with the group you sent as you may possibly have sent it wrong.

I have not mentioned the different ways of replying with the old Morse Auxiliary Signs or Numerals as it would spin out even this lengthly report to an unusual extent, but reference to Plates I, II, III, I think will explain them all.

I believe the books in use at home are made something like cheque books the part which remains in the books containing the message as you take it down and the portion you tear off being filled by the message written by the senior signaller and signed by him.

Cards however seem as good a plan, Nos. 1, 2 and 3 should change duties after each message, as it is most fatiguing either to look through a telescope or wave a flag for a long time consecutively. In waving the flag to make the dot it should be made to form the figure 8 in its motions above the head, otherwise it is liable to foul.

Also before raising it from the dash to the normal position A, draw it slightly back so as to disengage the folds from the stick, otherwise if raised exactly as it was dropped, the effect will be as at Plate VIII and at 10 miles you would lose the signal entirely.

In a high wind the signaller must be very careful as the flag is very liable to foul.

Great care must always be taken to ascertain the color of your back ground as on it will depend the flag you must use. Sky back grounds are constantly changing in hilly districts, so you must be always on the look out and change your flag accordingly. This will prevent the frequent delays which arise from your corresponding station having to interrupt your station to tell you to change your flag or position. The Code Book contains certain numbers which relate to this.

To find out the color of the back ground let two men take hold of the staff one at each end, point it towards the other station, look along it until you get the point exactly covering their position, then if the man at that point looks along it towards you, he will see the color of the back ground as it will appear to your corresponding station.

"Stations should be selected so as to be in clear view of any other station already established. They should be chosen so as to be in good view of other points which might be occupied advantageously as signal stations."

It sometimes happens that the station you are signalling to is situated in a plain, whilst you are on some hill or high ground. You will then find it more difficult to read their signals, and they must be very careful to use the proper flag. Great delay and annoyance is often caused by want of proper attention to the back ground and it is for this reason that it has been laid down as a rule that signal stations should always be established on the most elevated points. If the sun is shining in your face, you will find it almost impossible to read signals, although given from an elevated position, at the distance of a mile with the naked eye. If your back is to the sun you may be able to, but then your corresponding station will be in the unfortunate position above named. I remember one morning I was in this position and was helpless until I was lent a pair of binoculars. They are very useful up to three miles or so, but for any thing over that you require a telescope.

One thing to be remembered is that it doesn't matter what the distance is, provided you have a powerful glass.

If there are many stations out within sight of one another, I would suggest besides giving the general answer in reply to your pendants, you should give also the pendants, or more literally the pendant sign and number of your corresponding station, as I have seen the following occur in practice. Six stations, (1 to 6,) (2 to 5,) and (3 to 4). No 2 gives pendant 5, and sees No. 6 giving general answer, thinking No. 6 is No. 5. No. 2 goes on with the message, but soon finds out that No. 6 has been answering No. 1.

If No. 6 had given pendant 1 after his general answer, you would have seen you had got hold of the wrong station at once.

It is our duty to reduce the chances or likelihood of such mistakes taking place to a minimum, especially when the rectifying causes no fresh complications by new signs.

There are two Normal Positions A with a flag, known as signalling from the right or left.

First, is over the left shoulder as in Plate V and would be the position if the wind was blowing from the right.

Second, over the right shoulder when the wind was blowing from the left as in Plate X.

The first is the most generally used, as it is easiest for right handed men, and again, because you can still signal from the left if the wind does blow from the left, by turning your back to the station you are signalling to.

Signalling from the right, consists in changing the position of the flag and hands.

The right hand holds the staff at the extremity about the waist belt, and the left in a line with the right shoulder.

This position is more suited to a left handed man. At Plate X I have given the sketch to be found in the Instruction Book, and also in Sir Garnet Wolseley's "Soldier's Pocket Book." Both the above give the normal position A as the one to be retained when receiving a message.

Imagine holding the flag in that position while a long message is being given !

In the first place, it would only attract unnecessary attention to your station if in presence of an enemy, and in the second it would only fatigue the signalman without any benefit being derived from it.

In the Instruction Book it is evidently a mistake as 4 or 5 paragraphs on it state that, No 2 who has to hold the flag in this position has also to use the Code Book, and look up the groups of figures as they are called out by No. 1 which would be a physical impossibility if the wind was blowing at all high.

Colonel Wolseley lays particular stress on the necessity of concealing a signal station, so it seems strange he should have overlooked this point.

I am glad to say the instructor under whom I learnt always had the flag down until it was necessary to give the general answer. Besides, you notice a flag so much quicker when raised to give a signal in reply, than if it was perpetually kept up-raised, at present it is kept lowered until a signal has to be made.

The signalman should take up a good position, being particularly careful that there are no bushes or rocks near at hand, which might make it difficult to distinguish between the dots and the dashes, his attitude should be as unconstrained as possible, the feet 10 to 15 inches apart and the body allowed to follow the motions of the flag.

The most favourable conditions under which you can signal with flags or any visual apparatus except the Heliograph is "a clear atmosphere and a clouded sun."

In misty weather or with bad glasses at short distances, visual apparatus is little or no use, at long distances, if he has not a good telescope the army signaller is quite helpless. In the next number I shall speak more of the various states of atmosphere. The distance that a flag 4 feet square can be seen on a plain where the back ground would be trees or houses, cannot be laid down with any degree of certainty, but with a sky back ground and stationed on rising ground, with the sun at your back or clouded over, I should say from 1,500 to 2,500 yards with the naked eye.

The slightest rise in the ground should be taken advantage of.

There are many other points which I should have wished to have noticed, but space will not allow of it, at all events in this number.

In my next paper, I hope to be able to give the results of some trials I am now making with flags, for use in skirmishing, and also for directing the movements of troops when not in the presence of an enemy in the place of bugles. Again with small hand lamps for connecting piquets or videttes, &c., at short distances such as  $\frac{1}{2}$ ,  $\frac{3}{4}$ , or a mile, and further to draw attention, to the way of establishing signal stations of different kinds and to the different styles of instruments used at them.

I will conclude with two quotations from the Instruction Book which every army signalman should remember, *viz.*

*First.* Patience and deliberation are of vital importance in conducting signals, as a little hurry, will often cause long delays.

*Second.* Nothing in signalling must ever be taken for granted, repetitions must always be called for whenever the slightest doubt exists.

---

### *The Heliograph.*

This instrument as described in Journal No. 5 of the United Service Institution of India is certainly a most valuable addition to Army Signalling apparatus especially for this country.

The mirror is, according to the description given of it by Mr. Henry Mance, made of glass, which is its only drawback as it is so liable to be fractured if not broken. I would suggest that it be made of burnished steel which I fancy would give the same intensity of reflection and obviate the likelihood of its getting out of order.

Those used by Engineers, Surveyors, etc., are made of brass, I believe and I am now having one made of burnished steel, which will be very durable, as my first, a glass mirror, broke all to pieces whilst being fitted to the stand.

• R. HENNELL, CAPT.,

*25th Regt. N.L.I.*






## VII.

## A FEW NOTES ON THE CARRIAGE OF REGIMENTAL RESERVE AMMUNITION, ETC.

BY CAPT. COLOGAN, B.S.C.

ONE of the many military questions of the day caused by the introduction of Breech-loading fire arms, is the means necessary for keeping up a Regimental Reserve of small arm ammunition. When rapid firing weapons were first introduced it was thought that it would be almost impossible to supply sufficient ammunition to make good that carried by the soldier when expended. The experience of the late campaigns has shown this to be a fallacy, especially so in the Prussian Campaign of 1866, when the number of rounds fired per man was found to be unusually small. A rough bamboo cart, first built by W. Blundell, Esq., of the Opium Department, suggested to me the idea that a cart built somewhat after this pattern might meet the requirements of carriage for Regimental Reserve Ammunition. The advantages of the cart, are its extreme lightness, ability to go over rough ground, cheap cost of construction, and the facility with which it can be repaired by any common mistrie.

Sketch No. 1 will give an idea of the cart, though this is a drawing of an improved one since made by Captain Allen, 18th N. I.

At first, the cart was built entirely of bamboo, wheels excepted. Two bamboos, 10 feet 4 inches in length served for shafts and frame work of the cart, at 5 feet, 4 inches from the tip of the shafts, frame work AB (Fig 2) was secured by two iron  clamps fixed with a plate and nuts; and a piece of wood 1 foot in length, 3 inches broad at one end and eight inches at the other, served to keep the lower frame work at a proper angle. The frame work AB consisted of the springs EF (Fig. 3) made of bamboo, i. e. a bamboo cut in two pieces fastened together with thongs. Two ties, also of bamboo as at H (Fig. 3) to keep the frame work together. Common wooden axletree with two iron axles let in, and a very light pair of wheels, made of wood. The cost of construction being about Rs. 15. A seat was fixed on the two bamboos serving as shafts, and the foot rest was the front tie bamboo of the lower frame work. The original constructor drives this cart all over the district, drawn by a common bazar tat, and by means of a net work suspended beneath the seat carries with him any baggage, etc. he happens to require.

This cart was improved on subsequently by having a foot board fastened on to the back tie of the lower frame work, (*vide* Fig. 4) and by means of two iron bars screwed on to the upper frame for support. The cart has been thereby rendered able to carry almost double the weight it formerly could.

Without this addition, we have seen the owner in the height of the rains, send down from Goruckpore to the Domunghur Lake, the whole of

the sails and a few spars, etc., for a 28 feet cutter, the cart being drawn by a bazar tat, and driven by a boy at full gallop. The weight carried in round numbers may be said to have been equal to about five maunds, or 400lbs., or say 4,000 rounds Snider Ammunition. It is not with this cart, as then built that I propose to deal with, it is with its improved edition, as just built by Captain Allen, 18th N.I., from which I think a very serviceable, light, and economical ammunition cart might be constructed, by adhering to the same principles of construction. Sketch A is a drawing of the cart as used for driving purposes. It is built of soondree, and is very much stronger than any of those first built. The springs are made of a flat piece of soondrie, a bar of steel and half a bamboo, all clamped together with  $\cap$  bolts, *vide* Fig. 5. This cart has been seen carrying weight equivalent to 600lbs., that is to say, four persons of about this weight ; drawn by a pony and going at a good pace.

To convert it into an ammunition cart, the whole of the seats as at present used for driving should be removed, and in lieu thereof, a large box, as shown, shaded in Fig. 5, should be constructed from either deal, block tin, or any other similar light material. Ammunition should not be packed in boxes, but stowed away in the carriage itself, the box being divided into two or four partitions, as deemed most desirable, thereby saving the weight of the packing cases and allowing of more cartridges being conveyed. A cart of this description might be constructed at a cost of about Rs. 45, and made to carry about 10,000 rounds of ammunition equal in weight to 1031lbs. 4oz., taking 60 rounds of Snider cartridges to weigh 6lbs. 3oz.

The construction of these light carts whilst adhering to the plan and principles previously described, would necessitate their being somewhat stronger built, viewing that they would be required to carry about 13 maunds. The cart shown in Figure A costs from 35 to 40, and is drawn easily by a bazar pony, even over rough ground, and often goes over ditches, not deep ones certainly, but of such depth as usually abound in the lines of Native Infantry Regiments.

Four of these carts attached to every corps would give a Regimental Reserve of 40,000 rounds, or at the rate of something over 65 rounds per man, allowing the strength of a regiment in the field to be equal to 600 men in the ranks.

Annually the stud disposes of a number of horses undersized, and otherwise unsuitable for the Artillery and Cavalry services, every one of these in lieu of being sold, no doubt at a loss, might very easily be turned into use ; although unfitted for Cavalry or Artillery purposes ; by being set aside for service with the reserve ammunition carts or wagons. It is rarely, if ever, necessary for small arm ammunition reserve carts to move at a quicker pace than a walk, consequently no seats would be required for drivers, and the horses or ponies should all be led.

9



To every regiment, I would allow, according to its strength, four or six carts, with either four or six ponies or horses, each animal having a syce driver; and, to each regiment, I would further allow one spare pony or horse to fill up a casualty on an emergency, a regular reserve ammunition guard of a non-commissioned officer to command, and two privates per cart should be detached, both for the purpose of defence and for serving out ammunition. The Non-Commissioned officers and men detailed for this duty should, if possible, always be the same, so as to secure their being thoroughly acquainted with all the necessary details of this important duty. During peace, in cantonments and in camps of exercise, the regimental reserve ammunition detail, should parade daily with the regiment and follow it when at exercise, thus becoming thoroughly efficient for when its services will be most required, that is, on the day of battle.

There are many other ways by which the regimental reserve carts might be horsed; yearly horses are cast by the cavalry and artillery as no longer of use to them, which still might answer very well for draught of carts, as above described, they are bought at auction by many, and used for years after in harness, doing excellent work of all sorts and kinds. I do not say that every horse that is cast, will be suitable, for light ammunition carts, but certainly very many could be picked that would do for this purpose very well indeed.

Besides the regimental reserve ammunition, there is another point which will demand attention, and that is, the means of refilling again the regimental carts when the contents are expended. In the Crimea, the British army had, a "Small Arm Ammunition Reserve" officered and manned entirely by the artillery, and, of a strength as per margin. The question suggests itself, that, viewing the immense importance now-a-days of artillery fire, the celerity with which, when war is declared, armies now take the field, whether so important an item as a whole battery of artillery; as the strength of the Crimean small arm ammunition reserve is certainly that of a battery; should be diverted from its proper duties, to do those which might very well be carried out by others less qualified than artillerymen. Certain it is, that it takes many more months to turn out a trained gunner or artillery driver than to train an infantry soldier.

|                |                           |               |
|----------------|---------------------------|---------------|
| 1 Captain      | 1-2nd Captain             | 3 Lieutenants |
| 1 Asst. Surgn. | 8 Surgeants               | 5 Corporals   |
| 7 Bombardrs.   | 180 Gunners and Drivers   |               |
| 2 Trumpeters   | 12 Artificers : 220 Total |               |
| — — —          |                           |               |
| 36 Wagons      | 9 Store Wagons            | 256 Horses.   |

The same principles therefore which, as above mentioned, apply to an army in Europe, are equally applicable to the army in India. We ought not to look to the artillery to supply this want, we must form our "reserve ammunition company" from other materials, and I would suggest syce drivers for this purpose, having a semi-artillery-battery organization, with a European Officer in command, and two or more European Non-Commissioned Officers for each sub-division. The strength of a reserve ammunition company would depend on the strength of the army

to which it was attached, and the number of wagons in its charge. The "small arm ammunition reserve" in the Crimea had 36 wagons, each containing 36 boxes of 480 rounds Enfield Rifle ball cartridges or 17,280 rounds per wagon, and giving a total of 622,080. Now here there was a great deal of available space and weight, lost by having the ammunition packed in boxes, would not square canvas bags stiffened, answer just as well? They might be covered with a waterproof composition, and made to hold a thousand, or more, or less even, cartridges; and if each bag had a handle of the same material fastened on at one end, this would facilitate their being conveyed by hand whenever necessary. The wagons being made thoroughly weather-proof when first built and always kept so. The horses of the reserve ammunition wagons, should all be led by their syce drivers, and to each wagon a Non-Commissioned officer or private of the Company should be especially told off, to look after and attend on it. No ammunition should ever be given out except by the European N.C.O. in charge of sub-division. This remark as regards the issue of ammunition applies equally to the regimental reserve, except with the sanction and in the presence of the Non-Commissioned officer commanding the guard, no cartridges should be served out, and, to prevent confusion, the company leader requiring a supply of ammunition to refill the pouches of his men, should despatch to the regimental reserve one or two markers with the pioneer. drummers, &c., standing in the supernumerary ranks. Should the services of these men not be available, two or more men may be taken from the ranks. The necessity of these or similar rules to prevent needless waste of ammunition will, I think, be obvious to every one.

It is however a generally understood thing that the men's pouches, should only be replenished when withdrawn from the line of skirmishers, or from the first line, so there should be no difficulty for the regimental cart to come up in rear of the supports, reserve or second line, supply deficiencies; and then again be withdrawn to a position sufficiently in rear for safety, either to be re-supplied from the army reserve ammunition company, or else to await the further movements of its regiment. Rare indeed, I fancy, will the occasion for such a re-supply be necessary. The re-supply of the first line, however, would only be required, when it is deemed impossible to relieve it.

---

## VIII.

## RETROSPECT OF THE CAMP OF EXERCISE, DELHI, 1871-72.

IN the accompanying retrospect of our first camp of exercise, it is intended to give a narrative of what took place thereat, and to deduce therefrom suggestions which may be calculated to remove any defects which may have cropped up. It is proposed to treat the subject in a spirit not of dogmatic criticism but with the object of endeavouring to learn something professionally ; first, from the preliminary, second, from the brigade and divisional, and lastly, from the extended manœuvres which had occurred from the 15th December 1871 to the 28th January 1872 when the troops returned to their original standing camp preparatory to the break up of the force assembled under the personal command of His Excellency Lord Napier of Magdala.

The theatre or scene of operations is one familiar to all readers of Indian military history, and to many present with the assembled forces the very rocks and stones were more or less familiar, it is not necessary to introduce our readers to a very elaborate detail of the advantages, or disadvantages, of the country selected for our military operations for mimic war. Suffice it to say for the present, that Delhi, the capital of the once Great Mogul was the centre around and about which our fierce and hot friendly struggles were waged. The city itself is on the right or west bank of the river Jumna, it is traversed north and south by the Railway. It is shut in on the west and south-west by a range of low rugged hills, stretching from Wazirpoor, north-west of the city, to below Goorgaon, 22 miles south-west of the same.

The forces assembled included all arms of the service, European and Native, viz.—

3 Batteries of Royal Horse Artillery.

5 Ditto of Field Artillery.

1 Battery of Mountain Artillery.

3 Regiments of British Cavalry.

6 Ditto ditto Infantry.

making according to the fixed Indian establishment of these Corps a total European force of

*Artillery*—57 Officers, 1,350 N. C. Os. and men, 1,266 horses and mules, 54 guns.

*Cavalry*—75 Officers, 1,365 N. C. Os. and men, 1,365 horses.

*Infantry*—180 Officers, 5,310 N. C. Os. and men.

**Grand Total**...312 Officers, 8,025 N. C. Os. and men, 2,631 horses and mules and 54 guns.

Second—7 Regiments of Native Cavalry.

12 „ „ Infantry.

Poorbeeahs, Sikhs, Goorkhas, &c., &c.

6 Companies of Sappers and Miners.

Making a grand total of

152 European Officers, 12,715 Native Commissioned and Non-Commissioned Officers and men with 3,236 horses.

The whole Force comprised, supposing all corps to have been full strength :—

464 Officers, 20,740 Commissioned and Non-Commissioned Officers and men, 5,867 horses and mules, 54 guns.

Exclusive of course of the H. Q. Staff ; Divisional, Brigade, and Departmental Staff.

This force again was divided into Divisions and Brigades of nearly equal strength, the 3rd Division having a preponderance in Native Cavalry. These three Divisions were encamped as follows :—

The 1st Division under General Travers, v. c., at the old cantonment.

The 2nd under General McMurdo, C.B., at Ravasnah and Nungul Reg about 9 miles south-west of Delhi.

The 3rd Division under Sir H. Tombs, K.C.B., v.c., at Madipore, between the Subee Nuddee and the Bahadurgurh road.

The Standing Camp of Head Quarters was close to the 1st Divisions.

A slight outbreak of cholera delayed for a few days the assembly of the force. But in due time the several divisions were in their respective allotted Standing Camps.

Before however plunging into the preliminary doings of these camps, it is necessary to disabuse the minds of our readers in regard to the total strength of all arms as given above ; but it is not possible for one who has no returns to refer to, to state what was the actual strength of the force. The force which marched past our late much lamented Viceroy Lord Mayo, who bore himself so nobly on that bright 8th of January has been variously stated to have been 12,000 or 12,500 of all arms. Let it be said exclusive of officers. The first observation which occurs to one, is the difference between the fixed established strength and the actual numbers assembled. On an occasion, like the one referred to, every regiment corps or battery would turn out as strong as possible, and yet there are 8,000 combatants not present at the review. Undoubtedly a great many of these can be shown as on detached command, effective men elsewhere than in camp, camp duties, hospital require-



ments, writers, clerks, orderlies, signallers and the thousand and one, other purely non-combative duties in addition to the per-centage of sick have to be provided for under the present organisation of corps both in India and in England. Now it is understood, that the Prussians have reduced these non-combatant requisitions made on corps to a minimum. Baron Stoffel reports that combatants in the Prussian Army are forbidden to convey a wounded man even, to the rear, that every effort is made to maintain the combatant efficiency of regiments.

The more one hears or reads of Prussian organization, or rather it should be said, *Method*, the more perfect will it be found as a military system ; and, although such system may not be suitable politically to other nations and peoples, it admits of inquiry, on points as they present themselves, as to their adaptability to existing military systems with those nations and peoples. The great success, in her recent wars, of Prussia, has had the effect of inducing all governments possessing an army, whether well, indifferently or badly organised to take to camps of exercise. There can be no question that much good may result from these camps, but an army must not confine itself to this method of improving its tactical and perhaps strategic knowledge. It should be borne in mind, that France had its camps of exercise at Chalons for years before her recent struggle with Prussia and Germany. Military qualities of the highest order have been displayed more than once by France. She has had her noble triumphs over these very nations that have now brought her to sad grief. England also has military aptitude and capacity which have brought her in triumph through the wars she has been unfortunately involved in. But notwithstanding this aptitude and capacity for successful warfare, it is possible, she may be wanting in the great desideratum which goes far or further in commanding success ; "method" as perfect as that which obtains in the Prussian Army in all its various departments, is what we should seek to arrive at as well as tactical and strategic knowledge.

In the retrospect we propose to make of our first Camp of Exercise, any want of method will be remarked upon which may occur to us, not with a view of finding fault, but with the object of drawing attention thereto and inviting inquiry. The first we note is the one above stated, the apparently unmethodical way these requisitions for non-combatant duties are made on corps is seriously detrimental to combative efficiency. The same practice exists in reference to the supply of horses to Officers on the Staff, to gallopers, and amateur aides-de-camp, Orderly Officers and the Umpire Staff. The distress caused to zealous commanding officers on receiving such requisitions is truly lamentable to behold, and would be rendered laughable and ridiculous were we to endeavour to depict it. How are such requisitions for men and beasts met with in the Prussian army. A solution of the difficulty might be obtained by making inquiry and seeing if their method can be adopted.

Originally it had been decided to commence preliminary brigade and

divisional drills about the 15th of December. The routes furnished to corps from the Q. M. General's Department had been so drawn up as to permit the completion of the rendezvous of the forces at Delhi about that date. But an unforeseen accident rendered a slight delay necessary. About the 18th of the month the din of preliminary drills might be heard and seen in all three camps. There is no denying the fact that no forces that have ever been assembled with a view to professional instruction, whether Prussian, French, Russian or purely British, have ever displayed a more willing, zealous spirit than the troops under Lord Napier of Magdala, to this soldier-like quality so necessary to success in instruction, the late Lord Mayo has borne ample, generous and chivalrous testimony in his letter to His Excellency the Commander-in-Chief, which was perused by all in Camp with feelings of soldierly pride befitting the address. It would, perhaps, be bad taste after this to animadvert on certain points, which although not coming necessarily under the observation of a Viceroy, were nevertheless observable by others in more intimate contact with the professional occurrences of the days devoted to preliminary drills. The zeal and spirit with which Lord Mayo discerned the troops to have been animated had an element of defect about it. Brigadiers both of Cavalry and Infantry were over zealous at the start off, and it was said if the splitting pace were maintained, there would be a collapse. And perhaps these camp rumours might have assumed form and substance, had not the Christmas festivities and the heavy downpour from the flood-gates of heaven interposed their kind offices in behalf of man and beast. There did appear at one time a disposition on the part of some to overdo the thing, and to overtax the energies of both the soldier and the horse. In place of realising the condition of the component parts of their Brigades as so many tactical units brought together for the first time for purposes of instruction, they were looked upon as perfected machines, in fact, as compact and thoroughly organised brigades accustomed for months or years past to drill together. It may be a libel to say, that no three regiments of the whole Force were thoroughly up in Brigade manoeuvres, since instruction in such manoeuvres is a standing order, and commanding officers are enjoined to practice their regiments in them, but we all know how difficult a matter it is to get officers or men when at a single corps station to realise the niceties of brigade manoeuvres. The eye as well as the machine-soldier has to be habituated to the different formations. Military knowledge or instruction is imparted as much if not more through the eye as by means of the intellect. The system of preliminary drill of the Brigades, the Infantry Brigades more particularly, was somewhat defective. The newspaper critics of the several Divisions with their usual critical knowledge in such matters were not slow to run down one or more Brigadiers to whose unaccustomed handling such imperfectly practically drilled brigades were committed. But before condemning either the Brigadier, or his Brigade, let it be a subject for inquiry, whether or no the system of drills necessary for the acquirement of practical knowledge in brigade manoeuvres, admitted of such Brigadier or the regiments composing his brigade acquiring such skill and knowledge before

their assembly at the Camp of Exercise. The answer to this inquiry will no doubt explain the overzeal displayed by our Camp Brigadiers.

But scarcely had our Camp Brigadiers and Brigades recovered from their unaccustomed position or shaken down in their places when they were thrown into perhaps a still more unusual and unfamiliar attitude. The Brigades had to take their places in a grand Divisional line, and to be subjected to the perhaps untutored handling of a General. Newspaper critics have not been sparing in their criticism of Generals even, they are ever equal to the occasion. It is from these gentlemen who are invaluable now-a-days as military historians, and from personal observations, that this retrospect presumes to discuss the tactics of our Camp Generals. One of the first manœuvres practised by an officer in the position of a General is the "march past," and although it has no place in the heavy fight and shock of armies, it has a certain amount of moral element so necessary an ingredient in all armies. What Prussian, French or British soldier is there whose martial spirit is not aroused to its highest as he marches past the Crown Prince, Marshall McMahon, or His Royal Highness the Duke. The mere fact of knowing that this high honor may fall to his lot has its influence on the British soldier most assuredly, on all grand occasions of "march past." It is seldom therefore that one hears of a decided failure on this moral manœuvre. The next step is the attack and defence of positions. The selecting such positions affords a wide field to a General to display either his knowledge or ignorance of tactics or strategy. He may guard himself against any display of ignorance in strategy by confining his divisional performances to a simple tactical manœuvre with his division. It is difficult to detect errors in the performances of a single division without a thorough knowledge of the local conditions imposed by the General, without this knowledge it would be excessive folly if not impertinence and arrogance, even in a newspaper critic, to extol or condemn our Camp Generals of Division. The employment of a Skeleton Force to represent an enemy holding a position does afford a narrow field for military criticism. This very unsatisfactory mode of instruction was resorted to in camp preparatory to the extended manœuvres, but so palpably unequal are the conditions of the two forces which are required to engage in mimic warfare, that it is hardly possible to pick holes in view to their future avoidance. We were witness to two or three encounters of this kind in which mistakes occurred either from misapprehension of orders or from a forgetfulness of the skeleton exponent of strength. Preparatory to the extended manœuvres, the troops moved into bell tents and palls. The employment of bell tents in India had been unknown as a general rule up to the date on which our troops took to them at the Camp of Exercise. This move in the right direction, and the cutting down of personal baggage and servants are points to which attention should be turned. There can be no doubt that the luxurious single-poled tent the hill tent and other varieties of tents which are to be seen in a Camp, though necessary for a hot weather campaign, can be dispensed with for a campaign during the cold season of India, and the bell tent

or pall substituted with great advantage. The reduction of carriage alone is sufficient to recommend the change even for ordinary marches in relief. The 40lbs. of personal baggage is too limited, it might be increased by lbs. 20, with a detail of the articles laid down, and uniform patterns prescribed for such articles as admit of it. Beds should be disallowed as a general rule, one can substitute something else, straw, sugarcane leaves, or kirbee, when procurable, answer the purposes of a bed; servants might be allotted in the proportion of one per officer with a certain number of general servants such as a bheestie, dhobie, sweeper, cook, and cook's mate to groups of officers. The baggage belonging to regiments and brigades might be more systematically looked after, and disposed in the order of march; the inevitable doolie both for the sick, and the indispensable tiffin included in this arrangement. There appeared to be a want of method in the matter of baggage, observable on more than one occasion during the preliminary movement of troops in taking up their positions for one of the extended manœuvres. A slovenliness which marred the otherwise compact formation of the brigade in column of route. The proneness of the native to wish to be first on the new ground, to ingratiate himself in the good opinion of his sahib is an exceedingly laudable trait in an Asiatic, but it would conduce to the public good were it checked and kept very strictly within military requirements, to which all personal advantage accruing from the over-smartness of servants should be made to yield. The schooling of the non-combatant native mind in this very essential matter is no easy task, nevertheless it is we know from experience to be done. Inquiry into these several points brought to notice above will lead to a more perfect system being established than that which appeared to exist in our first camp. They are now remarked upon, not in a spirit of captiousness, but with the view of endeavouring to remove defects as they appeared to the writer.

We come now to the extended manœuvres. The actions of the 10th the 13th, the 19th, the 22nd and 23rd January. We will take them by priority of date, and endeavour to treat each engagement under some suitable head laid down by Colonel Hamley in his admirable work: "The Operations of War."

| ATTACKING.                  |         | DEFENDING.                 |         |
|-----------------------------|---------|----------------------------|---------|
| <b>Artillery</b>            |         | <b>Artillery</b>           |         |
| Horse Arty....              | 12 Guns | Horse Artillery.           | 6 Guns. |
| Field „ ...                 | 18 „    | Field „                    | 12 „    |
|                             |         | 40-Prs „                   | 6 „     |
| <b>Cavalry</b>              |         | <b>Cavalry</b>             |         |
| 4th and 20th Hussars        |         | 11th Hussars               |         |
| 1st. 8th & 17th Bengal Cy.  |         | 3rd, 6th and 12th Bengal   |         |
| Central India Horse.        |         | Cavalry                    |         |
| <b>Infantry</b>             |         | <b>Infantry</b>            |         |
| 1-5th, 65th & 72nd Foot     |         | 1-5th, 105th, & 109th Foot |         |
| 3rd, 10th, 14th, 20th, 35th |         | 11th, 17th 32nd & 40th     |         |
| and 40th N. I.              |         | N. I.                      |         |
| 3rd Goorkas.                |         | 1st Goorkas.               |         |

The opposing forces (as per margin) lay opposite each other along the Branch Canal, running from west to east. The right of the Defending force rested on Buraree, and extended thence westward *vid* Ibrahim-pore 2,200 yards. Kadipore (1900) Nunglee (1,380), Burra Khera (2,900) to Chota Khera Bridge (1,670) over the Royal Canal. The right flank was safe from

any turning manœuvre, being on the Jumna, nor would the left be turned except by a long detour to the enemy's right, thereby relinquishing this line of communication with Umballa, the Kurnal Road, and weakening his left wing, and thus exposing it to an attack by probably a superior force.

The attacking force approaching Delhi from Umballa by the Kurnal road, and from Meerut by the Bhagput road concentrated at Alipore where its right rested, with its left on Bucktawurpore and Futchpore. The object sought for by this force was the capture of the ridge covering Delhi, preparatory to besieging the city. A repetition in fact of what was done by the British Forces in 1857.

The defending force on hearing of the approach of the enemy moved out to give battle, and for that purpose took up the defensive position already mentioned, these dispositions were ascertained by the enemy who made his dispositions for the counter-attack accordingly. The result was the complete overthrow of the defending force which was broken in two, his left wing being held in check by a containing force equal if not superior to it, whilst his right wing was overwhelmed, and the greater portion made prisoners, the left wing being cut off thereby from the ridge. This success was achieved as follows. The enemy made a direct attack to gain the passage of the Branch Canal by the bridge about a mile to the south of Alipore, it was not very stoutly disputed; at the same time moving to the attack from his left along the Bhagput road. Having gained the passage of the Branch Canal, the attacking force drove back the defenders on Siruspore and Libaspore. A gap in their line was thus made, the defenders at Nunglee falling back on Kadipore *outwards* compelled thereto by an impassable swamp or jheel on their right rear. The left wing of the attacking force thereupon proceeded to deal with the force at Kadipore, Ibrahimspore and Buraree and drove it from Kadipore on to Ibrahimspore, and then the left attacking force was joined by the force moving down on Buraree *via* Hirunkee on the Bhagput road. By the junction of his forces the commander of the left attack was enabled to overthrow and capture the greater portion of the right wing of the defending force, and thereby completely discomfited the whole of the defending force. At the close of the first day's fight the attacking force held Buraree, Kamalpore, Mokundipore and Balsooa, thus compelling the left wing of the defending force to form line to a flank or obliquely to his line of communication from Siruspore, Libaspore, Badli and Azadpore. The next day his position was pronounced untenable.

#### COMMENTS.

1. The position taken up by the defending force was too extended in proportion to its strength. If we measure the distances from Buraree on the right to Ibrahimspore, Kadipore, Nunglee, Burra Khera to Chota

Khera Bridge, "it will be found to be nearly six miles. (See page 351. Hamley's Operations of War," for the formation of lines of battle at Austerlitz.)

2. It was unnecessarily too far advanced from the ridge, the object of attack by the enemy. From Buraree to the intersection of the Subbee Nuddee by the Bhagput road, is upwards of  $4\frac{1}{2}$  miles. At Azadpore where his reserves were supposed to have been to the extreme left of his position Chota Khera bridge, the distance is very much greater though somewhat less from Azadpore to Buraree.

3 This Force would have done better had it taken up the position Jaroudah, Mokundipore, Balsooa, Badli, the last covering the passage of the Royal Canal by the Badli and Hyderpore Bridges. This position would have been astride of his roads of communication with the ridge, and affording a strong central position, Badli-ki-Serai, for his reserves, about equi-distant from both his flanks. The frontage from right to left is about 4 miles, but a swamp to the north of Balsooa, at the time of the engagement perfectly impracticable, covered a mile and a half from any direct attack. (See page 342 Hamley, "Obstacles partially covering a front.") Here was just the occasion for a proper disposition of half or the whole of his 40-Pounder Battery. It would not very easily have been captured in a position commanding the approach to the inner flanks of his wings, resting on Mokundipore and Balsooa. A portion of this battery appears to have been taken on the 10th.

4. In this position, the defending force would have been as secure from a flank manœuvre as in the one it took up. With his reserves at Badli-ki-Serai support in superior force could readily be extended to either flank. The centre was not exposed or more liable to be broken. The right at Jaroudah and Mokundipore had the means of effecting an orderly retreat *vid* Daheerpore and Dakah, falling back to the bridge across the Subbee Nuddee on the Bhagput Road, at this point called the Alipore road, leading to the Flag Staff Tower on the ridge and to the Cashmere Gate of the city. The left at Badli and Balsooa falling back in the same unbroken order on Azadpore, whence a portion might retreat to the ridge by the direct road from Kurnal to the Lahore Gate of the city, and the remainder if necessary might take the left road leading past Mullickpore to the bridge over which the right had the means of effecting a retreat. And destroying the bridges over the Nuddee as he passed over, he could have delayed the pursuit of the enemy for a considerable time. It was supposed that this engagement would have lasted three days, but the defending force was defeated or out-manœuvred the first day, proving in some measure the faultiness of his defensive position.

The action of the 13th January was a very simple affair, and the task assigned to the force in possession of the ridge and the Poontoon bridge across the Jumna at Wazirpore where the ridge comes to an end and becomes absorbed into the dead level of the surrounding country, was not a very arduous one.

The defensive position taken up on this occasion was more in keeping with the practice obtaining with armies in the field generally. The frontage was not excessive and disproportionate to numerical strength and the defensive nature of the ground occupied. The attacking force could approach the position by the Kurnal road, and taking a turn to the left where that road cuts the ridge almost perpendicularly could gain the crest at the Memorial Monument. The crest is traversed from this point to the point where the Alipore road intersects the ridge similarly at right angles, by a good carriage road, and at different points along this crest road, cross roads are to be met with descending towards the city, and on the other hand towards the Subbee Nuddee. These points of intersection are, Hindoo Rao's House, the Observatory, the Mosque and the Flag Staff Tower and the Cashmere Gate or Alipore road.

The defending force occupied the ridge as far as the Flag Staff Tower its first line of carefully prepared defences was somewhat to the rear of that tower, the second line further back, eastwards towards the Jumna, it also held a ruined building still further to the rear on which the successive lines would retire and check the enemy, and prevent him from molesting the force whilst effecting the passage of the river; there was at Wazirpore itself a mosque which could also be held, and finally a *tete de pont* at the bridge. Thus this force was securely placed in this direction, and provided with every facility for accomplishing an orderly retreat, and at the same time severely punishing the enemy, should he attack incautiously. The left flank was safe at the ruined house for the ground to the left, and left rear was impracticable for artillery, and also swept by the defender's artillery from the opposite bank of the river. Nor was the bridge visible from this quarter.

The attacking force could also approach the position on its right along the Azadpore and Bhagput roads. On this side the bridge was visible, and within range of rifled ordnance from Jaroudah and Daharpore 2,100 and 2,400 yards off at the outside.

It was therefore necessary to have a portion of the defending force distributed in this direction. Thus one portion of the force, that on the ridge, faced westward, and another portion to the north along the Subbee Nuddee and then obliquely in a north-westerly direction. The attacking force moved to the combat along the ridge, and by the Circular Road between the ridge and the city, and he appears subsequently to have attacked with his left, but this was made towards the close of the fight. He was much superior in Infantry, but had only the same number of guns as his adversary.

The defending force accomplished the passage of the river without apparently much difficulty. What would have been the issue of the engagement, had it been real in place of mimic warfare it would be difficult to say, but, if we have rightly judged, and have been correctly informed of the mode of attack on the defensive position, we should be inclined to think it was faulty, and would most certainly have been repulsed on the right along the ridge. The position was hardly successfully assailable

by a direct attack in this quarter. Although the defending force was the weaker numerically, yet its carefully selected and prepared defensive lines more than counterbalanced the numerical disproportion.

Had the attack been made from the left with the right thrown back about Azadpore, the distance between Jaroudah and Azadpore, being 3,000 yards, less than two miles, the defending force would have been compelled to have made a hasty flank retreat, or to have changed front of action to its right and along the ridge its line of retreat to the bridge and its left at a considerable distance therefrom, and liable to be cut off should success have attended the attack from the enemy's left. Success was more likely on this quarter notwithstanding that the Subbee Nuddee intervened between the two forces. Moreover, the garrison from the city could have aided very materially by a sortie in force and by falling on the rear of the defending force. The bridge and the batteries on the left bank being easily assailable in enfilade the defender's passage might have been cut off by a few well-planted rounds from guns in advance of Jaroudah.

The defect in the mode of attack on this day might be compared to the defective allied attack at the Alma, as given by Colonel Hamley at page 385. The attack should have been made in échelon from the left, and since the defending force presented a salient angle at the junction of the force facing north along the Subbee Nuddee, and that facing northwest and ranged obliquely across the parade ground, it presented a flank exposed to enfilade by a force attacking in échelon from the left. Colonel Hamley's remarks at pages 398, 399, may be aptly quoted in reference to the fight of the 13th.

"The difficulties of approaching certain positions being increased, it will happen in future more frequently than in former campaigns that generals will rather manœuvre than attack them, preferring the hazards of losing their communications to the certain losses of the assault \* \* \* \* Indeed, the most legitimate use of the turning movement is not so much to attack an enemy's flank as to draw him from a position impregnable in front by threatening its weak side."

The importance of having selected, and trained officers on the Umpire Staff, officers known for their fitness for so delicate a post was made apparent in the engagement, the infringement of the Umpire rules was so marked on this occasion that attention was subsequently called thereto by his Excellency the Commander-in-Chief.

Another defect or weakness was observable this day, *viz.* the excessive, useless expenditure of small arm ammunition. These are points which will in some measure correct themselves after a time, but as it is not very probable that the same regiments will assemble at our next Camp of Exercise as were assembled last year, it may be useful to remark on these points.



The Military Manœuvre of the 19th January was confined to a flank movement of the 1st and 2nd Divisions from Nirasnah to Goorgaon, their march was to be molested by the force lying at Mahroulee near the Kootub.

The distance from Nirasnah to Goorgaon, as the crow flies, is over 12 miles, from Mahroulee to Goorgaon about 9 miles.

There are three roads by which a force lying in the neighbourhood of Nirasnah might move on Goorgaon; the first through Pahlapore, Nun-jub Jut, and Doulutpore direct on to Goorgaon, this road cuts the range of Hills running south-west from Wazirpore at Juwalarpore.

The second road is the Rajpootanah State Railway embankment. The third through Pahlum Bijwassur and Doulutabad, three miles to the north-west of Goorgaon.

The first road lay nearest to the force at Mahroulee. At a very early hour on the 12th this force moved out along a good road to Sekunderpore, clear of the range of hills already mentioned, from this point the force moved northward and occupied four villages commanding the direct road to Goorgaon, *viz.* Kupasherah, Doondaheerah, Moula Nerah and Doulutpore the last on the road.

In due time the enemy's column of march was descried moving along with his baggage well protected on the reverse flank and the column ready to form line of battle to its left if severely attacked.

The Molesting Force endeavoured in vain to invite an engagement for the possession of the more direct road, but the enemy was not to be diverted from his settled purpose of reaching Goorgaon by the road on which he was then moving, although it was somewhat longer. A few shots were exchanged but nothing further was attempted till late in the afternoon. About 3 P.M., the Infantry and Field Artillery of the Molesting Force moved off homewards, this movement was observed by a small force at Kupasherah from whence the detachment of the 3rd Division had been driven early in the day, and it was in considerable consternation as to the object of the move, fearing an attack in force, when to its surprise it discovered that the movement was to the rear, seeing that the village of Doondaheerah was evacuated, they moved forward and took peaceable possession. In the meantime, the Cavalry and Horse Artillery of the Molesting Force proceeded in the direction of the enemy, to seek an opportunity of harassing his march, and it was not long before the Molesting Force was drawn into a struggle or passage of arms, in which it got the worst of it being out-numbered and forced to retire, but before doing so a very brilliant Cavalry charge was delivered on both sides, which quite non-plussed the umpires when appealed to for a decision. The hostile squadrons flew at each other with the impetuosity and élan of men eager for the fray, but in so doing it would appear that the maxims for delivering a cavalry charge were not adhe-

red to in their entirety. The second or supporting line was wanting, the reserve with one of the opposing forces was forgotten. When the maddening rush was such as to upset the equilibrium of the Umpire's calmer mind, such forgetfulness however culpable is pardonable, and may be committed with impunity in mimic warfare, but it behoves good Cavalry Commanders to habituate themselves to the proper mode of delivering such charges to guard against their occurrence on occasions where and when impunity would not be the issue of their disregard of Cavalry maxims. On completion of this Cavalry affair the Cavalry Brigade 3rd Division moved homewards but being in utter ignorance of the change in the occupation of Doondahera, it moved unwittingly into the ambushade, and was severely smitten by the force in possession of that post. Both forces reached their respective encampments at a very late hour that evening. The work for both men and horses must have been very severe that day. Both camps were astir about 2 A.M., some portions of the force must have been out about 17 or 18 hours. No evil effects resulted to the men, but some few horses of a Battery of Horse Artillery appear to have succumbed to the fatigues of the day.

The military manœuvre of the 19th was a somewhat tame affair as such, because the operations of the force lying at Mahroulee were limited to a demonstration of molestation, but when viewed as a test of the powers of endurance on the part of our soldiers, European and Native, and as a test of their capacity to sustain the fatigues of a long active day and a fairly long march, it was and must be pronounced a promising and reliable success. And who shall deny to such capacity its fair value in warfare after the march of the Crown Prince of Prussia in pursuit of Marshal McMahon in 1870, where "legs" had as much if not more to say to the achievement of a signal victory than "arms."

The marching capacity of an army is a qualification to be developed and encouraged.

After the manœuvre of the 19th January the opposing Forces lay at Goorgaon and Mahroulie, and that at the latter place may be described as a Corps of Observation covering the siege operations which were being carried on against Toghluhabad supposed to be held by a suitable force and provided with Modern Artillery Armament. Its base of operations would appear to have been on the other side of the Jumna with which it communicated via Kalka-devi and Okla, and by means of pontoon bridges across the river. The force at Goorgaon may be styled the relieving force, having for its object the succour of the beleaguered garrison into which it was proposed to throw in supplies or to relieve it more effectually by compelling the besiegers to raise the siege.

The Corps of Observation took up its position almost due west of Toghluhabad about  $5\frac{1}{2}$  miles and astride the Goorgaon—Kootub road an interval of some 9 miles intervened between the hostile forces by the direct road via Suralee, Sekunderpore and Sultanpore.

The relieving force being the stronger, it was considered imprudent

to engage it in advance of Mahroulie which afforded but one confined tortuous road of retreat through a long straggling town.

Accordingly early on the morning of 22nd January, the baggage was sent to the rear to Kalka, and the main force also fell back behind the Kootub on the Delhi—Kootub road. A strong rear guard or detaining force of all arms was pushed forward to Sultanpore, between which and Ghetournee it encountered the enemy, and stayed it pending the passage of the main body through Mahroulie. In due time it fell back without severe molestation by the enemy, whose plan of operation was soon discovered, since his forces were descried at Mahsoodpore to the north-west of the Kootub, and moving apparently north-east with a view of falling on the line of communication to the rear at Kalka. His march in this direction had been rapid, so much so that had it been conducted with greater intelligence and knowledge of his opponent's movements, he might have possessed himself of the road; as it turned out, the Corps of Observation was forced into adopting a weak strategic line of battle in front of Shahpore looking north, his front of action being parallel to his line of communication. The position itself however was exceedingly favorable and naturally strong, admitting of prolonging the front on the right in the direction of Kalka without the movement being seen by the enemy. A partial engagement took place in this position.

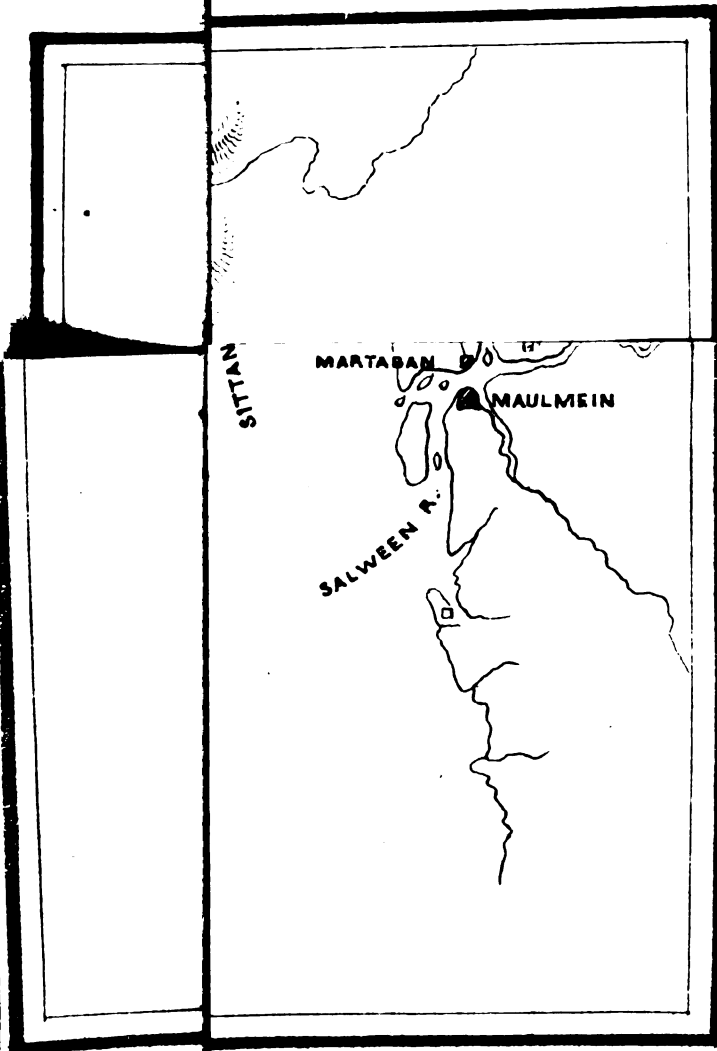
About this time the enemy put in an appearance to the south or rear towards Dewlee; necessitating the dispatch of reinforcements to the force operating in that quarter, but before these would reach the position where they were required, a truce was proclaimed, owing to the fatigue of some regiments of the relieving force, and thus the movements of the 22nd were rendered indecisive. It would be in accordance with recent military occurrences where wearied, fatigued troops were opposed to others less fatigued to award the palm of success to the Corps of Observation, more particularly as at this very conjuncture a whole brigade of the relieving force was at Mahsoodpore too far to have co-operated with the force said to have been fatigued. The next day the relative positions of the contending forces were changed. The absent brigade had come into awkward co-operative proximity with the main relieving force and threatened the left and left-rear of the Corps of Observation, and held the direct road from the Kootub to Toghlukabad.

The relieving force having thus corrected the errors of the previous day, there remains no other course for the Corps of Observation than to fall back on Kalka and Okla and relinquish Toghlukabad. The operations concluded by the Corps of Observation taking up its position at Okla supported by its numerous batteries of artillery which swept all the approaches. In due time the position was pronounced impregnable by the relieving force with the means then at its command, and so the operations of the 22nd and 23rd January were brought to a close.

When the Forces lay at Goorgaon and Mahroulie, the object of the relieving force being to succour the garrison of Toghlukabad lying to

the north-east, it behoved the Commander to see how he could effect his mission. He might operate by his right to the east by the Muttra road, or he might operate directly by seizing the Kootub and thence along the direct road via Khanpore towards the garrison, or he might gain his object in the way he adopted and in which he succeeded by an accident which in real warfare would have cost him very dearly, not because the selected point of attack was faulty in itself, but by reason of the want of sustained promptitude in its execution and the want of co-operation in his forces.

At one period of the operations he might have interposed his main body astride his adversary's line of communication with Kalka, combining with this bold, risky manœuvre the co-operation of the brigade, which by some accident was left at Mahsoodpore on the 22nd. Thus with his main body across his adversary's line and his right brigade to the north-east of the Kootub he would have been able to check the retirement of the main body of the Corps of Observation, whilst he pressed it at the same time from the rear with the Mahsoodpore brigade, compelling him to make a detour round the outer flank to regain his line of communication with his base and thus forcing the abandonment of Togh-lukabad. But as not unfrequently happens in military manœuvres in actual warfare, from want of good information of the movements of the main body of his adversary, and the unfortunate detention of a strong brigade at Mahsoodpore, the fortune of the day (22nd) inclined in favor of the Corps of Observation. Our readers are invited to make such observations as may occur to them on the various points remarked on in this retrospect, with the view of discussing matters of professional interest important to all soldiers.





# CORRESPONDENCE

---

No. 16-11.

555 M.

QUARTER MASTER GENERAL'S OFFICE,

MAHABULESHWUR, 4th June 1872.

FROM

THE QUARTER MASTER GENERAL OF THE ARMY

TO

THE SECRETARY, UNITED SERVICE INSTITUTION OF INDIA, SIMLA.

SIR,

By permission of His Excellency Sir Augustus Spencer, K.C.B., I have the pleasure to send for publication, in the Journal of the Institution, a copy of a report lately made on the "Heliograph" by Captain Luck, Instructor in Army Signalling in this Presidency.

I have the honor to be,

Sir,

Your most obedient Servant,

W. J. SHEWELL, *Lieutenant-Colonel,*

*Offg. Quarter Master General.*

---

Military Department.

*Army Signalling, Heliograph.*

No. 2776.

Bombay Castle, 21st June 1872.

Letter from the Quarter Master General of the Army, No. 552, dated 3rd June 1872.

Forwards a report by the Instructor in Army Signalling, on the working of the Instrument invented by Mr. Mance, of the Mekran Coast and Sub-marine Telegraph, called the Heliograph.

RESOLUTION.—A copy of Captain Luck's very favorable report on Mr. Mance's invention to be furnished to the Government of India, with reference to Secretary Colonel Burne's letter No. 1295, dated 26th February last, with a recommendation that the Heliograph be subjected to a

further series of testing by the Instructor of Army Signalling in Bengal, and if the opinion recorded of the utility of the instrument be favorable, that the Inventor be invited to carry out such modifications as would render it appropriate for Army purposes.

J. MACDONALD, *Lieutenant-Colonel,*

*Secretary to Government.*

To

THE QUARTER MASTER GENERAL.

THE COMMISSIONER IN SIND.

THE CONTROLLER OF MILITARY ACCOUNTS.

---

No. 96 OF 1872.

FROM

THE INSTRUCTOR IN ARMY SIGNALLING,

To

THE QUARTER MASTER GENERAL OF THE ARMY.

POORUNDHUR, *May 24th 1872.*

SIR,

In compliance with instructions contained in your Memos. No. 16-11—747 of 1st February 1872 and No. 16-11—2016 of 23rd March 1872, forwarding respectively Government Resolutions No. 391 of 23rd January 1872 and No. 1184 of 14th of March 1872, I have now the honor to submit, for the information of His Excellency the Commander-in-Chief, my report on the instrument invented by Mr. Mance of the Mekran Coast and Sub-marine Telegraph, and which he has named the Heliograph.

*Description of the apparatus.*

2. The Heliograph or Sun Telegraph is a circular mirror  $7\frac{1}{2}$  inches in diameter, supported by two metal pillars between which it works vertically on pivots. These pillars are fixed on a circular brass-plate worked horizontally on a metal base by means of a tangent-screw acting on the grooved edge of the plate.

3. An adjusting rod connects the top of the mirror with a brass lever which is fixed at one end to the circular plate by a pivot. A spring acts on the lever and raises it as far as a brass stop will permit. The depression and raising of this spring by means of the screw handle of the adjusting rod alters the angle at which the glass is inclined. The adjusting rod can be lengthened or shortened, as occasion may require, by twisting the handle and screwing the rod through the small brass ball which secures it to the edge of the mirror.



4. By means of these two adjustments the angles of the glass can be altered as the ever changing position of the sun may require.

5. In the centre of the glass a small quantity of quicksilver is removed to enable the Signaller to adjust the instrument correctly.

6. The instrument when ready for use is mounted on three legs screwed and clamped to the metal base.

7. From 12 to 15 yards in front of the instrument is placed a sighting rod. This rod is to mark a spot exactly in a line with the centre of the Heliograph and the distant station. A metal stud marks that spot, and a wooden cross-piece marks where the flash rests, when not directed on the opposite station.

8. Early in the morning or late in the evening, if the sun is directly behind the Signaller, the angle becomes very obtuse and the spot loses its circular form: at long ranges it is then necessary to have a spare glass, the arrangement of which is very simple, but with stations bearing North and South I have carried on practice during the present month as late as 6 P. M., at which time the sun had nearly set, but being on one side, no spare glass was necessary.

9. The weight of the Heliograph in its box, with tripod and sighting rod is 32 lbs., whilst, without the tripod and box, it weighs only 9½ lbs. I do not see that there is any necessity for having such a heavy box and tripod, and I am sure that the whole apparatus could be made up so as not to exceed 15lbs. in weight. At 10 mile ranges I have worked as well without the tripod as with it.

#### *Trials and their results.*

10. In February last, two Heliographs were sent to the School of Army Signalling from Kurrachee in charge of Lieutenant Stevenson, 66th Regiment, who had previously been instructed by Mr. Mance in the method of working the apparatus. I made myself acquainted with the method, which is most simple; but owing to an accident which happened to one of the instruments, I was unable to try them at any long ranges whilst Lieutenant Stevenson remained at the School.

11. On the 5th instant, the repaired Heliograph returned from Kurrachee, and I immediately commenced work by instructing my Assistant in the working of the instrument at short ranges. Signs of an approaching monsoon and the daily gathering of clouds and mists on the distant hills warned me that I had no time to lose if I wished to test the instrument at very long ranges; otherwise I should have wished to have had at least two months' constant practice at short ranges, in order to attain celerity in transmission of messages.

12. The Inventor, Mr. Mance, in his report states that Telegraph Clerks have with the Heliograph transmitted messages in the Morse Alphabet, at the rate of from 12 to 14 words per minute. Accustomed as

we have been to follow the comparatively slow movements of a waving flag or revolving shutter, I found that after a fortnight's practice, the greatest speed my Serjeant and self could attain was from 4 to 5 words per minute, and at long ranges it was even less.

13. After we had both attained a certain proficiency in working at ranges up to 10 miles, leaving the Serjeant at this station, I set out to try the instrument at longer distances. Our first day's work was over a 20 mile range, from Mander-Deo to this station. I sent my first flash at 9-30 A. M., and in less than a minute had established communication with the opposite station. A mist was hanging about both ranges of hills, but uninterrupted communication was kept up till 12 noon, at which hour I left for Paunchgunny. The next day, which was clear and bright, from the last named station to Poorundhur, distance 28 miles, messages were transmitted from 10 A. M. till 11-30 A. M. with the greatest ease, and owing to the clearness of the atmosphere, with far greater facility than at the 20 mile range. From Paunchgunny I proceeded to Mahableshwur distant from Poorundhur 35 miles. Before leaving Poorundhur, I was able to point out to my Assistant the two stations of Mander-Deo and Paunchgunny, but not knowing the exact position of Mahableshwur, or whether it could be seen from this hill, I took its bearings from a map and so gave him some idea in what direction to look for me. At 8-30 A. M. on the 17th instant, I commenced work, and in three minutes my Serjeant had found me out. The morning was misty, but not too much so to prevent our reading with the naked eye. Towards noon the mist cleared away, and the reading then became easy.

14. On the morning of the 18th instant, at 10 A. M., Colonel She-well, the Quarter Master General of the Army, inspected the working of the apparatus. The day was a particularly bad one for signalling, and tested the powers of the instrument to the utmost. When work was commenced, the outline of Poorundhur hill was barely visible, towards 11 A. M. entirely disappeared, but still the flash from the distant glass could be seen penetrating the mist, though the brightness of its rays considerably diminished. With the aid of field-glasses, however, the messages were easily read.

15. The last trial of the Heliograph took place at 8 A. M. on the 20th instant, in the presence of His Excellency the Commander-in-Chief Major-General Grant, and several Officers of all branches of the service. The day was clear, and messages were sent to and fro across the 35 mile range with ease and certainty.

16. The Heliograph can easily be worked by one man, but whilst working at the 35 mile range, the Serjeant and myself were each assisted by an Officer who had previously attended one of my Signalling classes.

#### *Opinion.*

17. Having thoroughly tested the Heliograph in every way, I can

\* Note.—It would be more correct to say “throughout the year except when the sun is obscured.”

W. V. S.

but arrive at one conclusion regarding its merits, and that is, that if adopted by Government, it must prove, for 9 months in the year, a most valuable addition to the Signalling apparatus

for India.\*

18. With the apparatus now in use, a 20 mile range is the longest I have ever accomplished, and that only with the best telescopes; whilst in clear weather, I am confident that with the naked eye messages can be read from the Heliograph at a distance of 50 miles.

I have, &c.,

GEO. LUCK, *Captain, 15th Hussars,*

*Instructor in Army Signalling.*



## REVIEW.

---

*Manual of Field Fortification, Military Sketching and Reconnaissance, published by Authority, London 1871.*

THIS is the official hand-book of instruction for Cavalry, and infantry officers in the military sciences detailed in its title page and as such we welcome it as opening out to those branches of the service a new field of knowledge which, if it has not hitherto been closed to them was all but unremunerative as a source of professional advancement. Such however it is no longer and as its study is now compulsory, we trust the work is already in the hands of many of our readers to whom the information it contains is manifestly of so much personal importance. But we must be permitted to regret that a work put forth by authority should exhibit so little trace of care and attention in its preparation as to be disfigured not only by errors of the press which the most casual revision even, would have corrected; but by details which the experience of many years' has rendered obsolete, and which consequently can only tend to mislead. Passing over shelter-trenches, which can only by the utmost stretch of courtesy be styled a branch of field fortification, most of the details of that art seem to be borrowed from Jebb, Macaulay and the earliest authorities on the subject.

For instance, we find our old friend Private Smith still at his post on the water-butt he has so gallantly held in every treatise on fortification which has appeared in the last forty years; then there is the tree on top of the wall ingeniously contrived to fall over on the *wrong* side at the slightest touch of a ladder or push of a bayonet, and again the balcony or machicooly built out to command the back-door for the convenience, we suppose, of the family, who ungratefully object to accommodate the defenders of "their hearths and homes" inside the house, otherwise they might just as easily fire out of a window or a hole in the wall with a screen in front of it. All this may still be useful to "Volunteers" though our own private opinion is that in England at least it is just the last lesson they should be taught; but since India is now the only practical school of foreign service left to the British Army, we think the compilers might have borrowed a few examples from this country and that for officers who are to serve nearly half their lives out here, the house at Arrah or on a larger scale the "Residency" defences at Lucknow would have been a better type for illustration than the "villa" of a city clerk at Hoxton or Clapham. "Trons-de-loups" in the same way figure in every treatise including the present one though we have never met them in actual service and for any practical use, they have none, except to serve as rifle-pits for an active enemy. "Attached Traverses" are similarly things of the past and the slightest experience might have shown the compilers that the only use of them in a battery is to *prevent* the gunners escaping when a shell drops in upon them.

In siege works the old dimensions for Batteries are retained though it was universally admitted after Sebastopol that they ought to be increased one-fourth every way to resist even the guns of that day, and the old method of constructing the embrasures is adhered to, though twenty years ago the "Aide Memoire" pointed out the advantages of first building the parapets solid and opening out the embrasures afterwards by sap.

Turning to Military Surveying we are glad to notice that the old "vertical" system of hill shading is abandoned but to compensate for its loss the "Scale of shade" is introduced. Fortunately it is not very applicable to India, but even for England a more useless, impracticable, and troublesome system could hardly have been invented or one better calculated to cramp the hand and destroy anything like freedom of execution. If young officers are to be taught rapid sketching in the field they must rely on simple contours alone sketched either with or without instruments and of uniform thickness throughout; where greater effect is required these can be multiplied to any extent, but the distance of the contours and not their relative thickness must always express the angle of slope. A great step in this direction would be to drop the expression of the angle in degrees and minutes entirely and retain only the designation used by Civil Engineers, viz. 1 to 1, 1 in 15, 1 in 40, &c. which is easily understood by any one. It is remarkable how difficult the problem of representing ground in relief has been made simply by the introduction of these conventional systems of shading. Set a young artist for instance to copy a bas-relief of a group of figures, and he can at once produce all the impression of reality by simple shading with the brush and the crayon, but lay the same relief flat on the ground and tell the military draughtsman to copy the figures as a group of hills and he finds himself utterly at a loss, for none of his conventional systems are applicable to the case. If any new system of shading is to be attained it must be one so simple as to be universally adopted not only by the military but by the Civil Engineer, the Geographer and map-draughtsman and the artist; and our firm impression is that we must look to the use of the brush or Photography to direct us to it. No doubt such men as Dawson and Petley have produced wonderful effects with the pen, but an examination of their works will show that they have been most successful when they have been least trammelled by conventional systems and scales of shade. The rest of the book is devoted to military reconnaissance, of the ordinary English type such as we recollect was taught at Addiscombe and Sandhurst years ago when we acquired much practical information as to the resources, and accommodation, of the various public houses in the vicinity of those centres of military training, when Military Geography was yet an unknown phrase; but this is scarcely adapted for India and we should gladly see the whole of the work remodelled by a competent committee of Staff Officers in this country before it is finally accepted as the test-book and text-book for the examination of Indian Officers.

# ORIGINAL PAPERS.

---

## I.

### A RETROSPECT OF THE SECOND BURMESE WAR\*

#### AND

### PROPOSED PLAN OF OPERATIONS FOR A FUTURE CAMPAIGN IN AVA.

---

#### PART I.

THE Treaty of Yandaboo, signed on the 24th July 1826, closed the First Burmese War. The following were the Articles of the Treaty—“That the Burman Government was to abstain from interference in the affairs of Assam, Cachar and Jyntea, to recognise Gambhir Singh as Raja of Muniipoor, to receive a British Resident at Ava and depute a Burman Resident to Calcutta, to concur in a commercial treaty, to cede, in perpetuity, the four provinces of Arakan, as divided from Ava by the Anupectumien mountains, and the provinces of Yeh, Tavoy and Mergui, to the south of the Martaban river, and to pay a crore of rupees, in four instalments, until the receipt of the second of which, Rangoon was to remain in the occupation of the British.†

As might be expected from a king and ministers, whose leading characteristics were ignorance and arrogance, the terror excited by the advance of our armies was, on their withdrawal from the vicinity of the capital, succeeded by an imperious insolence at least equal to that which had existed before the breaking out of hostilities.

The terrible lessons taught in the late war; the destruction of His Majesty's armies; the occupation of the greater part of his dominions; and the entire loss of no small portion of them, seemed in no way to affect the spirits of the king, or to cause him to feel his own weakness as compared with the resistless power of the British.

Our residents were, one after another, treated with scorn and neglect by the king and his rascally ministers. Our merchants were oppressed. Every obstacle was thrown in the way of trade. For years the British Government unwilling to enter on a second Burmese war endeavoured by every manner and means to propitiate the barbarous court at Ava. In this, however, they acted unwisely; for their solicita-

---

\* Professor Wilson.

† This retrospect is compiled for the most part from Mr. Laurie's "Second Burmese War."

tions were invariably mistaken for fear ; and the more the British urged friendly relations between the two nations and permanent peace, the more insolent the Burmese became. This state of things could scarcely be expected to last. From bad they got to worse ; from simple arrogance to overt acts of aggression. Our representative was entirely withdrawn in order to remove all cause of quarrel ; but the Burmese seemed determined to drive us into a declaration of hostilities. Towards the end of the year 1851, the Governor of Rangoon, on the false evidence of a Burmese pilot, seized the captain of a British merchantman and put him in the stocks until he should pay a fine of 900 rupees, other acts of oppression followed ; and the British merchants at Rangoon and Maulmein were constrained to apply to the Governor General of India for protection. This was readily granted ; and Commodore Lambert deputed to Rangoon with some British ships of war to settle matters. The Commodore demanded the removal of the tyrannical Governor of Rangoon and the payment of 9,000 rupees to the captain as compensation for the indignity he had been subjected to. His Majesty was evidently alarmed by the news of the arrival of the war ships at Rangoon,\* for he unhesitatingly agreed to these demands. The Governor was relieved forthwith and the money paid up.

On the arrival of the new Governor the Commodore requested him to receive a deputation of British officers. He expressed a willingness to do so : but on the officers repairing to his house at the appointed hour they were treated with the utmost insolence by the menials at the court, and eventually informed that His Excellency was asleep and could not see them. The fiery old sailor was scarcely the man to stand this impertinence, his only reply was to seize the king's ship, then in the Rangoon river and to issue a proclamation declaring the rivers Rangoon, Bassein and Salween to be in a state of blockade.

Having taken on board the *Hermes* those of the inhabitants of Rangoon who sought the protection of the British flag, the Commodore set sail with his prize. The Burmese opened fire from their stockades, the ships of war replied. The result of such an unequal contest could scarcely be doubted. In a couple of hours the stockades were entirely demolished and their defenders either slain or dispersed. The flotilla now proceeded to Calcutta, where Commodore Lambert reported to Lord Dalhousie the steps he had taken. The Governor General approved of the strong measures adopted ; but, in the hope of being able yet to avert the calamity of war endeavoured to negotiate. This was all to no effect, however, war was inevitable : and on the 12th February 1852 it was decided to send an expedition to Burmah.

In the beginning of April 1852 the following British ships of war were assembled in the Rangoon waters: The *Feroze*, *Moozuffer*, *Zenobia*, *Sesostiris*, *Berenice*, *Medusa*, *Rockcliff*, *Sir Thomas Gresham*, *Hem-*

\* It is a Burmese custom to exaggerate news tenfold, so it is probable that the king heard that at least a hundred ships with a huge army had arrived in the Rangoon waters.



*psyche* and *Atalanta* had come from Madras ; while from Calcutta had come *The Hermes*, *Tenasserim*, *Enterprize*, *Fire Queen*, *Proserpine*, *Salamander*, and *Phlegethon*. The new steamer *Rattler* had also arrived from Penang with Admiral Austen on board. The land force which had arrived on board the steamers was under command of Major General Godwin, C.B. ; and consisted of the following corps ; H. M.'s 18th Royal Irish, 51st K.O.L.I. and 80th Regiments, the 9th and 35th M.N.I. and 40th B.N.I., six companies of European artillery, three from Madras and three from Bengal.

Total force of Europeans 2,725, Native Infantry 3,400, to which force if we add the sailors who were available for land service, 8,000 men at least could be assembled for the attack on Rangoon.

Before commencing operations against Rangoon, General Godwin decided to strike a decisive blow against the town of Martaban, a large place immediately opposite the British town of Maulmein, capital of the Tenasserim Provinces. Accordingly, he set out thither with a wing of H. M. 80th Regiment, which was to be reinforced by the garrison of Maulmein, a wing of 18th R. I. for the attack on the town. This, the first engagement with the enemy, was a complete success. Not a moment was lost, as soon as the ships arrived opposite the stockades, a heavy cannonade was opened on them ; a storming party was formed under command of Colonel Reignolds, 18th R. I. ; they dashed boldly at the place, and in a few minutes Martaban was in the hands of the English. The object of this attack was merely to overawe the Burmese in the vicinity of Maulmein, as an assault on the latter place had been anticipated. Martaban was garrisoned by some Native Infantry ; and the General returned to Rangoon with the wings of the 18th and 80th.

At about 9 o'clock on the morning of the 11th April,\* the British ships of war opened fire on Rangoon on the left bank and Dalla on the right. The enemy replied, at first with some vigour and not altogether without accuracy, but their fire soon died away into desultory volleys here and there. By 11 o'clock the action was over, the fire from the defences was silenced, and the stockade and a great part of the town in flames. On the Dalla side, however, the Burmese seemed still to stick to their works. A storming party of sailors was formed and despatched to the shore on boats to dislodge them. Running their boats on to the low mud banks opposite the stockades, the "Jacks" quickly formed a somewhat rough array and rushed forward with a shout, cutlass in hand, Their grim visages evidently sufficed for the enemy, for they abandoned their works and fled without striking a blow. Thus successfully were the operations of the first day's attack on Rangoon brought to a close. The land attack was next on the programme.

Shortly after daybreak on the following morning (Monday)

---

\* The capture of Martaban was on the 5th.

the ships once more thundered forth upon the town and the troops landed in two brigades thus: 1st Brigade. 18th R. I. (right) ; 51st K.O. L.I (left) ; 40th B. N. I. (centre). The Sappers and Miners were placed in rear of left flank. 2nd Brigade: 9th M. N. I. (right) ; wing 80th (centre) ; 35th M. N. I. (left). The force was formed up in quarter column.

As soon as every thing was ready. General Godwin put the first brigade in motion. He purposed to advance by a circuitous route to the east side of Shwe Dagon Pagoda, a colossal mass of solid masonry defended by triple stockades, rampart, and ditches, as on that side the fortifications were said to be weakest. The second brigade was if necessary, to support the first.

It soon became evident that the enemy had anticipated an advance in this direction and taken measures to check it. The advance of the column was a company of Bengal Artillery with 4 guns, covered by four companies of the K.O.L.I. These had not proceeded far, when, on reaching the summit of a small knoll, they found themselves in the presence of the enemy. An artillery fire was opened upon them in front ; while on their flanks Burmese skirmishers under cover of the jungle commenced a desultory fire of musketry. It was soon discovered that the artillery fire proceeded from a work directly on the line of advance, in which, to all appearance, the enemy were strongly posted. It consisted of a white building containing a colossal figure of Gautama, this was surrounded by a wall ten feet high, outside which was a stockade of equal size, the interval being filled up with earth.

Major Reid, Bengal Artillery, opened fire on this position at a range of 800 yards with two guns and was quickly supported by Major Oakes, Madras Artillery with two more ; but sufficient ammunition had not come up and they were obliged to cease firing before much damage had been done to the works. This was a misfortune. But General Godwin knew well from his experience of the last war, that any hesitation would give the enemy confidence and boldness. A storming party was formed of the 51st and Sappers and Miners, Major Fraser, Chief Engineer, closely followed by Captain Rundall, R.E. led the way. The party advanced slowly, encumbered by five heavy scaling ladders, the Burmese meanwhile keeping up a brisk fire on them from the wood. As the enemy grew bolder, it was found necessary to ground ladders, unsling muskets and drive them off. This done they again advanced. Under a heavy fire from the work the party coolly reared their ladders and scaled the ramparts in gallant style. There was no occasion to use the bayonet, for the defenders evacuated the work and scampered off into the jungle. Our loss was considerable. Lieutenant Donaldson and Captain Blundal were mortally wounded. But the sun did more damage than the bullets of the enemy, Major Griffiths, Brigade Major, Major Oakes, R.A. both died of its effects on this occasion ; the latter almost instantaneously ; and Colonel Foorde, Brigadier Warren and Colonel St. Maur were also rendered temporarily *hors de combat* by the terrific heat.

On this evening the troops encamped on the open plain. They had yet to perform the crowning feat of the campaign, the capture of the Shwe Dagon Pagoda.

The day following the occupation of the 'White House Stockade' was fully taken up in making preparations for the grand attack that was to take place on the morrow. The troops notwithstanding the heat worked with an excellent spirit ; four eight-inch howitzers being dragged up from the shipping, a labor of no small magnitude, considering the nature of the ground.

At daybreak the entire force, two brigades, advanced ; H. M. 80th with four guns of Montgomery's battery formed the advance, and with little difficulty reached the desired position, *viz.* a rising ground some 800 or 1,000 yards to the east of the pagoda defences. The troops following formed up under fire at a range of 700 yards. The fire from the pagoda now commenced with no small vigour ; missiles of various shapes and sizes whistling through the air and not a few dropping into the columns under the hill.

It may be interesting to the reader before learning of the capture of this position to know something more of its nature. Lieutenant Laurie thus describes it : " The hill on which the temple stands is divided into three terraces each defended by a brick and mud rampart. There are four flights of steps up the centre of each terrace, three of which are covered over ; the east, the south and the west. Their heavy guns were on the upper terrace ; their light ones on the second and third. The rampart of the upper terrace being mostly of bricks and mortar, is of superior description.

At this formidable work,\* then, the artillery thundered for a couple of hours with apparently little effect. It soon became clear that assault was the only means by which the place could be captured. The untrained bands between the ramparts, though not devoid of courage, feared less a hundred fold the dropping shot and bursting shells than the deafening shout and resolute rush of the British soldier. The assault thus took place. A wing of H. M. 80th under Major Lockhart, two companies of 18th R. I. under Lieutenant Hewitt and two companies 40th Bengal N. I. formed the storming party. Colonel Coote, 18th R. I. commanded. Over an open space of 800 yards this force advanced with the utmost steadiness, exposed the while to the full fire of the place. Arrived at the foot of the stone steps already referred to the leading company, led on by its officers, made a rush up, followed closely by the whole attacking force. The Burmese notwithstanding the superiority of their numbers and the strength of their position, fled in the wildest panic, their chief, as is generally the case, being well in front.

The Shwe Dagon Pagoda was by far the strongest post in the country ; so it would have required no prophet, even at this early period, to

---

\* The pagoda was defended by about 20,000 men.

foretell the result of the second Burmese war. Our loss in the two days fighting was two officers and 15 men killed and 14 officers and 118 men wounded.

General Godwin now determined that the troops should rest, for a season, on their well-won laurels. Their duty now consisted in running up rough bamboo houses in anticipation of the rainy season, which was expected to commence in the end of May. In this work they were cheerfully assisted by the Burmese who, finding that the British were not so black as they were painted were daily flocking back to the town.

After the lapse of nearly a month, an expedition was despatched from Rangoon, in search of the Ex-Governor, who had fled northwards with his beaten troops. It consisted of 500 men of the 18th R. I. and the same number of the 35th M. N. I. under Colonel Abthorpe. On the 9th the expedition returned to Rangoon, not having come up with the object of its search.

On the 12th the force at Rangoon was re-inforced by the addition of the 67th B. N. I. from Arakan. The rains had now fairly set in, and disease; that foul attendant on glorious war; had commenced to work its ravages in the ranks of the army at Rangoon. On the 11th the 49th B. N. I. had 300 men in hospital and the sickness was daily growing worse. A forward motion was notwithstanding, determined on, Bassein was to be attacked. The latter was the most important place in the south of Arakan, and at this time was strongly fortified and defended by a garrison of 7,000 men. On the 17th, General Godwin, having embarked 800 men on board the *Sesostris*, *Moozuffer*, *Tenasserim* and *Pluto* repaired thither. The ships anchored off Nigrais Island on the evening of the 17th, and on the following morning steamed up the Bassein river. At 4 P.M. the flotilla arrived opposite the town. The defences were about one mile in length, a strongly built mud wall occupying the left of the line; while in the centre was a huge pagoda, well supplied with guns and jingals.

The enemy allowed the troops to land without the slightest molestation, evidently fearing to bring on themselves the terrible fire of the ships. General Godwin, in his despatch thus describes the attack which now followed: "The contest that stamped the operations of this remarkable day with a brilliant conclusion was the attack on the mud fort, most scientifically built, and of great extent, which could only have been constructed under a despotism that commanded the labour of its subjects in the short time they had been about it. It was not entirely completed in its details within. The storming party under Major Errington proceeding to the left of the Burmese works, accompanied by Lieutenant Rice of H. M. frigate *Fox* and Lieutenant Ford of the *Madras Sappers*, came upon the mud fort fully garrisoned and well-armed. The attack was most determined as was the defence obstinate. It was bravely stormed, but with the consequence of Major Errington and several officers and men being severely wounded. The whole affair was over at a little after 6 o'clock." In the meanwhile a party of sailors

had carried a stockade on the opposite bank of the river, taking 6 guns. Bassein was now garrisoned by two companies of the 51st and 300 sepoy of the 9th M. N. I. The remainder of the force the General led back to Rangoon, where they arrived on the 23rd May.

About this time news arrived at Head Quarters of a Burmese attack on Martaban. It was organised, it was supposed, by a robber chief named Moungh-shwe-laoung, and was so vigorously conducted that had not reinforcements arrived from Maulmein, it would have succeeded. The arrival of the latter, however, disconcerted the enemy, and caused them once more to 'take to their heels.'

While British armies were thus striking terror into the hearts of the Burmese troops in the southern portion of the Province of Pegu, the capital was convulsed with civil war. In the beginning of May the Peguese had risen against the Burmese garrison and expelled them,\* but the place was soon afterwards re-occupied by the king's troops, and it was now designed by the authorities at Rangoon to side with the rebellious Peguese in re-capturing the town. With this object in view then an expedition started from Rangoon under Major Cotton. They arrived to find a sharp contest going on between the rebels and regular troops; and so great was the confusion that it was difficult to distinguish friend from foe. After some rapid and somewhat wild operations, during one of which a party of sailors landed and allowed the whole of their boats to be captured by the enemy, the great pagoda was captured and the rabble troops of His Majesty put to flight.

The fortifications having been demolished, Major Cotton returned to Rangoon with the whole of his expeditionary force.

In the beginning of July a naval expedition proceeded up the Irawaddy to Prome, at this time a large and populous city. Seeing the place apparently unprepared for defence Captain Tarleton determined to attack it with his sailors. A storming party landed and occupied the place without any resistance. The presence of the war-ships seemed everywhere to terrify the enemy into inaction.\* Captain Tarleton captured twenty guns, many of them of large calibre; also a considerable number of war boats and barges, some of which contained treasure.

This latter operation may be said to have concluded the first campaign in the second Burmese war.

On the 27th July, Lord Dalhousie, Governor General of India, arrived in Rangoon. He held a levee, issued a flattering proclamation to the troops for their career of brilliant successes, and started for Calcutta on the 1st of August.

---

\* This consisted of the regularly enrolled soldiers of the king of Ava, among whom no doubt were many Peguese. An ill feeling has always existed, and still continues to exist between the Peguese and Avites, or adherents of the kings of Ava.

† The fact of ships moving at a rapid rate without sails or rowers utterly dumb-founded the Burmese; they attributed it to the machinations of supernatural powers, from whom it is even now commonly believed, the British receive counsel and aid.

Inaction followed. Surmises as to the future proceedings of Government formed the general topic of conversation. Meanwhile fever and dysentery were hard at work.

It was decided that the army of Ava should be strongly reinforced and advance if necessary to the gates of the capital.

The army was to consist of three brigades of Bengal and three of Madras troops. The Bengal Division was to be commanded by Brigadier General Sir John Cheape, K.C.B., the brigades being under Brigadier General Reignolds, Colonels Dickinson and Huyshe, C.B. respectively. Brigadier General Steel, C.B. was to command the Madras troops, the brigades being under Brigadier Generals Elliott, McNeil and Forde, R.A. The latter commanded the whole of the artillery which with the exception of one battery, was attached to this Division.

General Godwin retained the supreme command. The whole of the above forces had not arrived when, on the 6th September, General orders announced that active operations were to be re-commenced without delay. On the 27th one entire brigade, that of Reignolds, left Rangoon for Prome, under command of General Godwin. On the 9th October the flotilla of 8 steamers arrived opposite Prome.\* Whilst our ships were taking up their positions the enemy kept up a sharp cannonade on them from their defences, but noise and smoke† was the only result, few of their missiles reaching the ships. At about 5 P.M. this harmless fire ceased altogether and the 18th R. I. and 35th M.N.I disembarked and established themselves on the river's bank. On the following morning they advanced to the great pagoda, the main stronghold of the place, and occupied it without opposition, the Burmese having retired during the night. A few days later the Burmese chief Bundoola gave himself up to the British.

On the 9th November a second brigade had arrived to reinforce the army at Prome, and the command devolved upon Sir John Cheape, General Godwin having returned to head quarters at Rangoon.

On the return of the first expedition sent against the city of Pegu under Major Cotton, the place was quickly re-occupied by the king's troops, who set themselves to work to repair the defences and erect fresh stockades in the vicinity.

A second expedition now set out for Pegu under the Commander-in-Chief. The difficulties that it encountered were considerable. The season was unpropitious, there was not sufficient water in the river for the steamers to approach the town, and the heat was terrific. The troops landed several miles south of Pegu and were obliged to advance through an almost impenetrable jungle, harassed by the enemy's

---

\* On the way up the river Admiral Austen died.

† On this occasion a Burmese chief who had continued for some time to blaze away from the opposite side of the river with no visible effect was christened by the sailors "Smoky Jack."

sharpshooters. For some distance the pioneers had to cut a pathway through the dense bamboo wood. The advance was consequently slow but it was none the less sure for all that. Notwithstanding the fearful heat our soldiers, native and European, pushed forward with cheerful determination, and were soon under the mud walls and stockades of Pegu. The place was captured with but little loss by a storming party of the Madras Fusiliers, and garrisoned by 200 men of that gallant corps and 200 of the 5th M. N. I. ; the rest of the expeditionary force returned to Rangoon.

The latter were scarcely out of sight of the city, when the Burmese advanced and surrounded it in vast numbers ; and dragging up their guns, commenced a destructive fire upon the place. The garrison at first made several successful sallies upon their besiegers and drove them off into the jungle, but this was found to be of no practical use, as within an hour or two they had again occupied their former positions. The numbers of the enemy seemed to be daily increasing, and things began to wear a somewhat serious aspect. The Burmese were unremitting in their endeavours to surprise the garrison by night attacks. The men were worn out with fatigue and continued watching. Supplies and ammunition began to fail. Meanwhile the Commandant sent continued applications for aid to Rangoon, but his messengers were evidently apprehended by the enemy, as for some time none reached their destination. At last General Godwin hearing of the distress of the garrison despatched two gun boats with supplies and ammunition for their relief, but these were attacked by the Burmese and obliged to return when within a few miles of the beleaguered fortress.

The news of this calamity had a most dispiriting effect upon the gallant but exhausted defenders of Pegu. But the relief was not far off ; for on the 14th December the Commander-in-Chief arrived to the rescue with 1,300 men at his back.

On the advance of the British the Burmese withdrew from the immediate vicinity of the town and took up a position in an open plain some miles to the northward. Here they commenced to intrench themselves with marvellous rapidity.\* They covered the plain for miles and must have numbered 10,000 men. It was decided, notwithstanding to attack them, and on the morning of the 17th about 1,200 British troops defiled out of the ancient city and through the thick jungle that surrounds it, and debouching on the open plain to the north at about 9 A.M. Before them was the whole Burmese army a vast unwieldy mass of moving mortals, strong, but impotent to use their strength. A resolute attack such as British soldiers are wont to make, and this rabble must have dissolved like snow under a midday sun, but such was not to be the case. On this occasion the gallant General, in a most unaccountable man-

---

\* The Burmese are wonderfully clever at erecting temporary defences, they consist of stockades and entanglements made of bamboos intertwined with all the points sharpened.

ner, seemed to lose his head. The column was advanced to within charging distance of the enemy and then halted, whilst the ponderous masses of the latter slowly fell back under the eyes of our impatient soldiers. For an hour the column remained halted and then came the order to advance in pursuit. But the enemy had in the meantime disappeared, there was no enemy to pursue, not a man, not a cart, not an elephant, Lieutenant Laurie thus describes the movements that now took place :

“ After more than an hour's halt the men stood to their arms and formed up on a road leading nearly west. Hopes were now entertained of again speedily beholding the enemy. Although not a vestige or trace of any number of men was observed along the road yet on the repeated assurance of the guides the march in that direction was importunately persisted in which ended in our reaching the village of Sephan-doon before sunset. With the exception of a broken down buffalo cart and an old woman, there are no patriots in Burmah so staunch as the old women, come friend or foe, the post was found abandoned. The old woman stated in a lively manner that the enemy had not been there that day. General Godwin, it is said, expressed his extreme displeasure at the conduct of the guides. Many now thought that instead of halting, the enemy should have been at once followed along the Shœogyne road, as the men had not marched far and their blood was up, they could have kept up a hot pursuit for many miles, and perhaps although unaided by cavalry, they would have captured some guns and baggage, also carts and other carriage which we much required.”

On that evening the troops encamped at the village named above and on the following morning started once more in pursuit of the enemy. Proceeding in a north-westerly direction, about noon they struck the Shœogyne road, where they beheld a trace of the passage of a vast multitude northwards. The guides here, once more endeavoured to mislead the army, they assured the General that it was useless advancing further as the enemy were at least twenty miles ahead, and in full retreat. Notwithstanding that only the day before the troops had been led on a wild goose chase into the jungle by these perfidious guides, their counsel was once more listened to, and the column halted with the intention of giving up the chase, and returning to Pegu. The column had halted within cannon shot of the entire Burmese army whose presence was only discovered by the merest accident. The writer already referred to this narrates the circumstances—“About one o'clock P.M. it was reported that two of the Cassay horse had appeared in front of the position occupied by the detachment of the Madras Fusiliers. A staff and two other officers accompanied by two men went out along the northern road to reconnoitre and the Burmese being within long rifle range, two shots from a Minie were fired at them, the first at about 460 yards, went sufficiently close to one to make him bow his head, another at about double the distance also fell close. The horsemen making off at their utmost speed, the party moved on to a wooden bridge, from which they retired, and where a better view of the country in our front was ex-



pected. From this nothing at the time could be seen except a village and some large houses to our left, some Poonghee houses on the road about a mile in advance of the bridge, and a large village some distance to the right ; in many places it was thought a line of newly turned up earth could be distinguished, as if extending from the houses on the road, on both sides, towards the villages on the right and left. Not a sowar was to be seen except the two horsemen above noticed, who observing the party stationary at the bridge began to approach slowly. It was at this time that Captain Travers, General Steel's Aide-de-camp, rode up on his brave little Arab *Selim*, and galloped past the party. The Cassay horse wheeled about. The gallant Aide-de-camp dashed on after them, and had gained within 100 yards of the last when many more men suddenly rode out to meet him, and numbers of the enemy showing themselves about the houses ; the energetic Captain was compelled to pull up. As he walked quietly back, the Burmese horsemen following at a respectful distance, the whole extent from village to village became alive with men. A long line rose up from their entrenchments where they had been lying concealed and the houses and villages were soon filled."

An immediate attack was of course decided upon, the bugles sounded and the men stood to their arms ; but now again for the second time the gallant old general seems to have mistrusted himself. Two columns of attack were formed and an advance made against the enemy's position. They had not proceeded far, however, when the order came to halt ; and the huge masses were once more allowed to melt away slowly and unmolested, when a resolute attack must have scattered them to the winds, slowly but surely they retreated, taking with them guns, baggage and elephants, all of which ought to have been in the hands of the British. On the following morning the troops marched back to Pegu which they reached at about 1 o'clock P.M.\*

The place was now once more garrisoned by 700 men, including 450 Europeans, the remainder returned with the Commander-in-Chief to Rangoon.

The Governor General's Proclamation now arrived, annexing the Province of Pegu to the British Empire in the East. The troops of His Majesty of Ava who still remained in the province were to be "driven out forthwith."

Let us now turn our attention to the army at Prome which had been left in command of Sir John Cheape. Save the temporary excitement of having to repel a rather well organized and formidable night attack made by the enemy, the army at Prome had been condemned to weary inaction. The Burmese troops in the neighbourhood were evidently cowed by defeat and by the consciousness of their inability to

---

\* I have described the above operations in detail, as they are the only example of the Burmese making a stand in the open plain. They seldom venture into the open ; preferring to fight behind stockades or under cover of the jungle.

compete with disciplined soldiers, for after the failure of the grand night attack they retired from the vicinity of the city.

Early in January 1853 a land column started from Martaban under command of Brigadier General Steel, C.B. with the view of penetrating the country east of the Sittang River and advancing as far as the ancient city of Tounghou.\* General Steel left Martaban on the morning of the 14th January and took the road that led northward to Beling. To describe the march of this column over 240 miles of country through no small part of which they had regularly to cut their way, would be neither interesting or instructive to the reader of this paper. The opposition which they encountered was simply *nil*. As they approached the towns and villages a white flag was hung out on the walls to denote submission and the gates thrown open. The people seemed to look with no unfriendly eye on the grand array of huge foreigners, they found them to their great surprise utterly unlike the predatory hordes of the soldiers of Ava, inoffensive when unmolested and willing to pay for whatever they received.

After a march of 34 days General Steel defiled his little army through the gates of the famous old city and fortress of Tounghou.

Our hitherto glorious path of victory was now to be interrupted by one dark disaster a robber chief named Myat Toon, having established himself in the district of Donnabew, some 45 miles N. W. of Rangoon, still continued to breathe defiance ; and had succeeded in capturing many of our boats as they passed up and down the great River. An expedition was sent from Rangoon to dislodge him : it consisted of 185 seamen, 62 marines, 300 men of the 67th B. N. I. with two three-pounder guns. On arriving at the town of Donnabew on the right bank, the party were informed that the robber's stronghold lay some 25 miles inland with no practicable road leading thereto. The knowledge of this fact would have caused any wise commander to hesitate before he committed his men to a dense and pestilential jungle which was known to be infested with the foe. But the fiery sailor, Captain Lock, C.B., never hesitated for a moment. Highly distinguished in his own profession and possessing indomitable courage, he pressed onward boldly. The party had to proceed for a great part of the way in single file, there being no regular road, and they were advancing in this order, when on nearing the bank of a large nulla, or dry creek, a destructive fire of artillery and musketry was opened on them from a breast work in front and from the jungle on each side. There was no room to form up for attack, and a retreat was quickly determined on. Meanwhile the men were falling on all sides. Captains Lock and Price were mortally wounded. The guns were spiked and abandoned ; and the ill fated party retraced their steps as best they could along the narrow pathways pursued and harassed by the triumphant foe,

---

\* This force consisted of one European Company of Madras Artillery, with a battery ; one company of Sappers and Miners ; 450 Bengal Fusiliers and 150 Madras Fusiliers ; Head Quarters and wing of 10th B. N. I. ; Head Quarter and wing of 5th M.N.I., a detachment of Ramghur Native Cavalry and Lieut. Fraser of the Bengal Engineers.

The gallantry of the 67th B. N. I, who did their best to cover the retreat, alone saved the party from total rout. Besides their brave commander, this expedition lost in killed and wounded close upon 100 men.

On the news of this disaster reaching Prome, Sir John Cheape determined to place himself at the head of a strong force and advance against the stronghold of the audacious Myat Toon. Accordingly on the 22nd February, he set out from Henzadah, a place some 35 miles north of Donnabew, with the design of attacking the robber's position from the north, but as usual, the Burmese guides either had no knowledge of the country or wilfully misled the column; for after wandering about in the jungle for eight days the general was obliged to abandon the search and return to the banks of the Irrawaddy. On the 7th March, Sir John once more set out from Donnabew to attack Myat Toon. He took with him a force of about 1,000 men, made up of H. M. 80th, 51st and 18th Regiments, 67th B. N. I, two companies of Sikhs and a small detachment of Irregular Horse. The artillery consisted of two guns, two mortars and three rocket tubes. Every precaution was taken to ensure the success of the expedition. The advance was slow and cautious, and communications was kept open with the rear. As the column advanced they found the enemy everywhere posted to oppose them. The heat was terrific, cholera was raging in the camp, At one time the civil commissioner informed the General that he did not know the road and had no means of finding it out. The result of one wearisome day's march was to bring the head of the column back to the identical spot from which they had started many hours before. Notwithstanding these mishaps, Sir John was determined not to turn back. His perseverance was rewarded; for on the 19th he arrived in front of the Chief's main stronghold. This consisted of a long low breast work extending for several hundred paces along the bank of a deep dry nulla.

The advanced party consisting of the 80th and Sikhs, endeavoured to form up for attack, but the jungle was thick and the fire from the work so vigorously maintained that great confusion ensued. The 18th R. I., now came up in support, but their numbers only tended to increase the general turmoil. Two guns and the rocket tubes had been dragged to the front and opened fire on the enemy at a range of 25 yards. The smoke and the din helped to increase the disorder. Meanwhile the fire from the breastwork was unabated; missiles of various shapes and sizes were flying through the air, rough iron and leaden balls, pieces of glass, necks of bottles, great lumps of granite and even brass representations of Gautama were falling like hail among our men. At last the general discovered the key to the position, viz: a road which led from the left of the attacking force straight up to the breast-work. A storming party was quickly formed they rushed up the pathway and into the work, which the Burmese abandoned with the utmost precipitation and scampered off into the jungles. A party was sent in pursuit, but nothing could be seen or heard of the chief or his followers, the latter having evidently

dispersed after their final defeat and betaken themselves to their jungle homes.

Sir John Cheape now led his force back to Donnabew which he reached on the 24th.

Our loss in these operations had been great in proportion to the size of the force: 140 were killed and wounded (including several officers) and 100 died of cholera.

The attack on Myat-Toon may be said to have been the last episode in the second Burmese war. The Province of Pegu was now fairly conquered; and the newly elected King of Ava was anxiously soliciting peace.

After a lot of huckstering and chicanery, our terms were agreed to, the Governor General of India once more arrived in the country, and proceeding up the Irawaddy, himself fixed the position of the two white pillars which this day mark the boundary of British territory on this great River.

Thus for the second time in the present century had Burmese insolence been punished; had fresh laurels been gathered by British armies beyond the Ganges; and yet another broad and fertile province added to our mighty empire.

#### REMARKS ON THE WAR.

It will be seen from the above narrative that the Burmese trust entirely to their improvised fortifications for defence; and that even the consciousness of possessing a vast superiority in numbers to their enemy will not induce them to quit these rough defences for the open field.

Living in a country covered with forest they are highly skilled in woodcraft, and the rapidity with which they can erect stockades and form impenetrable entanglements in the bamboo woods is astounding.

As to the methods of attacking them in their strongholds, the experience of the last war teaches us that assault was by far the most effective; but in these days of improved artillery they could certainly be "routed out" without our being obliged to resort to such an expensive mode of attack.

Throughout the war the opposition offered to the progress of our arms was weak in the extreme, and the troops of His Majesty of Ava showed little courage or determination, but it must be borne in mind that they were without organization, that their arms were of the worst description and that they were opposed to the finest troops in the world.

Individually the Burmese are not cowards; and their continual panics can only be attributed to the utter incapacity of their chiefs.

In hardihood and power of undergoing hunger and fatigue they are certainly equal to any people under the sun. The "field kit" of a Bur-

mese soldier consists of a mat to sleep on, carried at one end of his musket, a cooking pot slung over the other; round his loins is bound his wallet of rice, which, added to the *dah*, inseparable from every Burmese, completes his outfit for a campaign. When such luxuries are not forthcoming, however, these sturdy little fellows can keep themselves alive and in working condition for months on leaves, herbs and the bark of certain trees.

As there were few failures in this war, there are but few lessons that may be deduced from it. The first grand error committed was that of leaving a weak detachment isolated in a rotten old fort at Pegu without even a gun boat to communicate with the base of operations. It was only their devoted gallantry, favored luckily by the want of enterprise of the Burmese, that saved Major Hill's party from annihilation.

In the operations which followed the relief of Pegu a fine opportunity was lost of breaking up the Burmese army; while deplorable ignorance seems to have existed as to the movements and whereabouts of the enemy: the presence of a force of 8,000 men within two miles of the British camp being only discovered by accident.

The disaster at Donnabew was palpably the result of placing a sailor in command of a land force; the impetuous valour of Captain Lock ended in his own death and the ignominious defeat of some 600 British soldiers and sailors by a party of Burmese dacoits.

Throughout this whole campaign the untrustworthiness of the Burmese guides seems to be apparent, and points to the necessity of the utmost caution in the event of a future campaign in Ava.

## PART II.

### PROPOSED PLAN OF OPERATION FOR A FUTURE CAMPAIGN IN AVA.

In the event of a future campaign in Ava, the "Theatre of War" would in all probability be confined to the valley of the Irrawaddy from the British frontier to the city of Mandalay.

On this portion of the great river the richest and most important towns in the kingdom are situated, while inland the country is thinly populated, is covered for the most part with impenetrable jungle, and intersected by a network of rivers and creeks.

The object of operations ought certainly to be the occupation or destruction of the capital. Its fall would completely paralyse the kingdom, and reduce further resistance to a minimum. Within its walls are stored almost the whole of the cannon, muskets and military stores of the monarch, indeed his only faithful and loyal subjects are the Burmese who reside in Mandalay and its vicinity.

Before undertaking the invasion of a country, it is above all things

necessary to select a secure starting point protected against the counter attacks of the enemy, and at which may be kept a reserve of troops, arms and stores for supplying the requirements of the advancing force. This is termed the ' Base of Operations' and may be a fortress or line of mountain ranges, a great river, or the sea.

When the base is extended, perfect communication should exist between its different points.

The Frontier of British Burmah is at present defended by the fortresses of Thayetmyo on the Irrawaddy, and Tounghoo on the Sittang. Each is garrisoned by a wing of an European regiment, one Native Infantry regiment and a battery of Field Artillery. Since the annexation of Pegu in 1853 no communication has existed between these two frontier posts, but a road is at present under construction. It takes five days by river steamer to reach Thayetmyo from Rangoon and seventeen days at least to reach Tounghoo from the same city. The distance from Thayetmyo to Tounghoo by the new military road will be about 80 miles. Having established intrenched posts at intervals, it is proposed here to make this line of road the base of operations for our imaginary campaign in Upper Burmah.

The Plan of operations to be the following: That early in August, when the Irrawaddy is at its highest, a flotilla of gun boats and river steamers with a military force on board, should set out from Thayetmyo with the object of attacking the Burmese capital. That towns offering resistance by firing on our ships should be burnt, a military force being landed if the enemy were discovered in strength. Arrived at the capital, which could be reached in a week, overcoming all opposition, the gun boats should proceed to bombard the place from the river. If the distance of the fortified city only  $2\frac{1}{2}$  miles from the river's bank were considered too great for an effective fire from the ships, a force of infantry and artillery should disembark and advance to the attack. Fine roads run from the river bank to the western entrances into the city. The moat is bridged over at several points and the wall rampart which surrounds the city could easily be breached. Were it designed to destroy the city by fire, a few rockets and shells thrown into it would quickly do the work: being entirely built of wood, once on fire, Mandalay would soon be a heap of smouldering ruins. Though the fall of the capital would probably be followed by the submission of the nation, were it contemplated to occupy the country permanently, it might be well to despatch a land force up the valley of the Sittang. This river, above the frontier, is shallow and treacherous, so that an advance by water would only be a waste of time and end in a failure. During the dry season a practicable road leads from Tounghoo to Mandalay, and it would be advisable to advance by this route. This land column should be well provided with pontoons and material for crossing the numerous rivers and creeks by which the road is interrupted; no important opposition could be expected in this direction, as the valley of the Sittang is but sparsely populated and there are no defensible posts.

*Composition of an invading force.* The strength of an invading force must depend upon the nature of the obstacles to be overcome and the power of the enemy to resist its advance. In the present instance the Army of the Irrawaddy, proceeding up a broad and navigable river by steamers, need have little fear for its communications; nor could it anticipate any effective opposition. The king of Ava has no fleet to oppose it on the water and there are no fortified posts that could stay, even temporarily, the progress of a flotilla of British gun boats.

This army, then, might be composed of two European Infantry regiments, two regiments of Native infantry and two batteries of field artillery. A battery of light mountain guns might prove efficacious were it found necessary to advance any distance inland.

Such a force as the above would be sufficiently powerful to overwhelm any Burmese army to which it might be opposed, and at the same time not be unnecessarily overgrown.

With regard to the strength of the Land Column, in order to ensure perfect success; and that it might be strong enough to advance with resistless force and still keep its communications with the base open, it would be advisable, perhaps, that it should be similarly constituted to the army of the Irrawaddy.

*Military resources of the King of Ava.* Securely stowed away within the walls of the Palace are a considerable number of cannon, muskets and even some modern rifles. The big guns are as a rule unserviceable; there are no trained gunners and most of the guns are without carriages. There is a great scarcity of ammunition. Most of the muskets are, like the king's cannon, dangerous to fire and much more likely to 'bag' the firer than his intended victim.\* In a case of emergency His Majesty might be able to muster 30,000 faithful followers; but they would be without organisation, without serviceable arms, and without professional military leaders. The standing army consists of about 2,000 men under command of a Frenchman, General De Facieu.

EDWARD BROWNE, LIEUT.,  
2-21st Fusiliers.

---

A few spearsmen mounted on Pegu ponies constitute the cavalry of the Burmese Empire.





## II.

### THE EQUIPMENT OF IRREGULAR CAVALRY.

My object in offering the following remarks is, *viz.*

To arm our Native Cavalry with better and more efficient weapons.

To improve the present horse appointments in shape and weight.

To put the men in such apparel as is best adapted for the hard work of India and our Frontier, and

To make them light cavalry in every sense of the term, able to go anywhere and do anything. I can the more easily do this by dividing my subject under three heads :—

1st. The Arming of Light Cavalry.

2nd. The Horse Appointments.

3rd. Clothing.

And my suggestions thereon.

#### 1ST. THE ARMING OF LIGHT CAVALRY.

Our Native Cavalry at present are armed thus, the New Pattern Smooth-bore Carbine, Lance, Sword, and Pistol. The Carbine carries nominally up to 100 yards, but is not the least use over 50 yards, as over that distance its shooting is by no means certain.

The Lance is about 12 feet long made of bamboo, having a spear head, pennon and a heavy ferrule at the butt. The swords are generally Native Tulwars with a small heavy iron hilt and only a very small tongue of metal running up into the hilt, the sword is over-balanced and breaks off at the hilt on receiving a heavy counterblow or if a cut is delivered unevenly, that is the edge not leading.

The Pistol is a very heavy single barrel of the same bore as the carbine and is very unwieldy ; generally something wrong with the main spring, caps missing fire some three or four times. In the Punjab Cavalry, 15 men per troop are armed with Sharp's Breech Loading Carbine, a weapon once used by our Dragoons but condemned, from which there is a great escape of fire from under the breech-block, burning the cuff and wrist of the left hand. Again the celerity of loading is almost done away with in " capping," the hammer at half cock is too close to the nipple, which does not allow the exploded cap to be easily removed and causes also a difficulty in fixing a new one.

In closing the breech the end of the cartridge is cut off thereby, casting loose powder over the breech which has to be got rid of by giving the carbine a cant over to the left, but which is likely to be forgotten when sharply engaged, the powder thus blowing up in the men's faces

and shaking their confidence in the weapon, I would suggest making the whole of our Native Cavalry, Lancers, there are only 5 Corps of Lancers out of 30 Regiments of Cavalry, attached to the Bengal Presidency. I would arm them thus :—

Fifteen men per troop to have the Snider breech-loading carbine similar to that which our Dragoons have ; the rest to have lance, pistol and swords. The lance to be 10 feet long, which I consider quite long enough, with a ball below the head to prevent it running too far into a man's body, the shaft to be of Male Bamboo not too thick and a simple ferrule at the butt to be placed in the bucket at the stirrup (*See illustration of lance head*).

The pistol for a private to be a light handy weapon throwing a heavy ball with swivel attached to the butt for a pistol cord.

The non-commissioned officers I would arm with a good double pistol over-and-under barrels.

The Native officers I would arm all with a five-barrel revolver (Adams). In swords I would recommend the universal adoption of what is called " the Paget Blade " with a hilt of the following description— which allows the free play of the wrist, and has a bearing for the little finger, a great point in delivering a cut—a good broad tongue in continuation of the blade to run into the hilt up to the top where it should be riveted twice in the length of the hilt, the grip to be shaped to the hand and of wood on each side of the tongue and covered either with leather or whip cord, I prefer the latter as the grasp does not shift (*see illustration, the tongue marked in dotted lines*). A sword greatly preferred by the Natives is the artillery sword, the blade is similar to the Paget blade, but the hilt is of iron and is heavy.

I would suggest that all European officers be allowed to wear what swords they prefer and can use with the greatest effect and according to their physical power, for it is impossible that a man only 5 feet 7 inches or 5 feet 8 inches, and weighing about 10st. can use efficiently, after a long day, a sword that is 36 inches in the blade and that weighs 4lbs. I would also suggest that every officer have a knowledge of the Cavalry sword exercise and know something of fencing.

## 2. THE HORSE APPOINTMENTS.

Those at present in use are a headstall and bridle that contain some 15 pieces of leather with nothing in the way of chain reins or protection for the headstall from a sabre cut, and which weigh with breast plate, crupper, martingale, surcingle and retaining strap, 6lbs.

*The saddle* is of Hussar pattern, and with wallets, stirrups and girths, weighs the enormous amount of 22lbs. It is against the saddle chiefly I have to complain. The seat is of such a shape that a man cannot sit down in his saddle, and to remain in it at all he has to lengthen his stirrups and ride on his fork, by balance, instead of riding as nearly every native likes to ride, seated on the part provided by nature and



with a go  
when he  
in a most  
deed any  
in line at  
in one han  
be either  
most mise  
do more h  
pain to h  
main in i  
behind it c  
march or a  
found on t  
would make  
have those  
always sore  
and ride m

Now, i  
each light  
illustration  
his weight  
have to arr  
seat, I hav  
rup instead  
say is to  
efficiency.  
10 lbs. 6 lbs.  
in use the s  
mal feels th  
ate in ridin  
man always e  
the want of  
friction being  
having a  
one thing to  
three years.  
out for some  
backed or gri  
a put on an

I would  
it is only wo

Why no  
looks neater  
at on.

Brille,  
pieces of lea

with a good grip of leg. To watch the distressed appearance of a sowar when he is trotting in one of these saddles is ludicrous, he bumps about in a most ungainly manner not at all suitable for a march past or indeed any other manoeuvre ; then, if there is a charge or a long advance in line at the gallop what with keeping his balance, keeping in line, sword in one hand, reins in the other, and a strong going horse under him, he either breaks out of the ranks or is pulled on to his horse's neck, a most miserable object, and totally unable to harm any one, but rather do more harm to himself because riding as he does in such a saddle is pain to him and all his energies are concentrated in trying to remain in it. Again the saddle is furnished with two pads, that project behind it on each side of the back bone of the horse ; if after a long march or a month's work, the horses are examined, two marks will be found on their backs and all the hair rubbed off, and a little more would make them bad sores. Why have such a heavy saddle and why have those long pads behind. Have our saddles got these and do we always sore-back our horses ? I mean any one accustomed to keep horses and ride much.

Now, in my humble opinion, the saddle I am going to suggest is much lighter, more roomy, and less liable to injure the horses' back (*See illustration.*) It will be seen that a man riding in my saddle will have his weight more evenly distributed in the saddle because he will have to arrange his stirrup to his length of leg and peculiarity of seat, I have also given my saddle a good substantial hunting stirrup instead of a thing like a bucket. The great object I should say is to reduce the weight without reducing the durability and efficiency. My saddle with wallets, stirrups and girths complete, weighs 16lbs., 6lbs. lighter than the one at present in use. In the saddle at present in use the seat is somehow off the horses' back and consequently the animal feels the weight more, there not being the unity in motion so requisite in riding ; in my saddle the seat and thigh grip is on the horse and a man sways easily and with unity to the horses' pace, it is I firmly believe the want of this affinity of motion that causes half the sore-backs, friction being necessarily greater. I would also recommend each man having a good English made numdah an inch thick, it is a first rate thing to have under the saddle ; a good English numdah will last three years, the country made one only lasts a few months. I have ridden for some years in a saddle of my description, and have never sore-backed or girth-galled a horse, a great deal depends on how a saddle is put on and how the girths are drawn up.

I would draw especial attention to the saddle cloth, what use is it ? it is only worn on reviews and inspection and is unnecessarily heavy.

Why not have a black sheep skin Shahbazai, it is much lighter, looks neater, besides forming in cold weather a most comfortable thing to sit on.

*Bridle.*—Instead of having a bridle that contains 15 separate pieces of leather I would suggest a simple head stall after the manner of

what is called the "Crimean" or "Nolan Bridle" with bit and reins attached by a simple method; in our present bridling we have no chain reins and no protection for the head stall against a sabre cut; in the bridle suggested, I would have a curb chain half an inch in width laid along the leather from one corner of the mouth over the head to the other corner.

I would also suggest curb chain half an inch wide laid along the leather of the reins right up into the man's grasp, the rein to be just the proper length and no longer (*see illustration*) the dotted lines show where the chain will be laid, I would also suggest an uniform bit something like a pelham bit of native shape working on five hinges (*see illustration*). The martingale I would have a simple strong standing one not a huge mass of leather and buckles.

The crupper,—why have a crupper at all? most horses hate a crupper and stick their tails down on to it in a very unseemly manner especially when cantering. It is of no use except when going down hill and we are not always descending hills.

The surcingle, retaining strap, breastplate, and girths, I would retain as they are at present.

The bridling complete as at present in use without chain protection of any sort weighs 6lbs.

A Bridle complete as I suggest with chain protection weighs 5lbs.

### 3. CLOTHING.

This is a subject that far more experienced heads than mine have thought over, but still I have my ideas and they may be of use.

To commence with the turban; it is without doubt the most suitable head dress for a native. I would allow each sect in a regiment to tie their puggies in the National Manner, but would give to all Musulmans in addition a "Kuzilbash topee." I would suggest that a light but strong curb chain be neatly entwined in the different folds, some say that the turban is proof against a sword cut, perhaps it is against an awkward cut, clumsily delivered, but not against a blow really meant.

For the body dress I would suggest the universal adoption of the chupkun, it is neat, easily washed and workmanlike, low in the neck, loose and wide, reaching to a little above the knee, khakee drill for hot weather, serge or cloth for cold weather. I would suggest shoulder chains (mail) be always worn, as it gives a set off to the dress and is serviceable, all in one piece commencing from a little below the shoulder on one side, up the shoulder, round the back of the neck, down the other shoulder to a little below it, fastened at either shoulder top with one button and at the bottom with two buttons. (*See illustration*).

I would suggest that "Poshteens" be worn by all ranks in the cold weather, short sleeved but coming well down the thigh with a split behind to prevent it getting under the seat.

All also to be supplied with a "choga" for wet weather, this to form part of a man's heavy marching order kit and to be strapped in front of his saddle over the wallets. Pyjamas.—I would recommend a great change in this garment, at present it is made loose and is yellow in color and very objectionable, both in shape and color. Would we choose loose trousers to ride about in, and if we did, would we not lose leather especially if riding at a sharp trot some 7 or 8 miles on a strong horse, a native nearly always suffers from such abrasion of skin after a long ride, what with riding by balance and loose trousers combined. I now would suggest khakee in color and every man to have two pairs, one for mounted and the other for dismounted duties, the one for mounted duties made something like our breeches tight from a little way above the ankle to about four inches above the knee, then loose up to the waist. For the cold weather I would recommend leather trousers such as are made in Kangra and worn often by Dogras, they are made of soft leather, comfortable and enduring in wear, besides being warm such a pair of trousers would last a man for two years. In the way of boots I would recommend Hessians made of good stout leather, they look neater and are just as serviceable, the boots at present in wear are huge shapeless things several sizes too large for the wearers and soon wear out and look bad. I would suggest that all be made to carry in one of the wallets a pair of strong shoes (chupplies for Pathans) for dismounted service and duties.

In the way of belts many have written and invented different sorts of belts, I have worn every sort and not found one yet of any comfort or ease in wearing, so I have had the audacity to make up one of my own idea of which I give a drawing and explanation. A 'Sam Browne' belt is first rate if you carry only sword and pistol, but there is no arrangement for glasses or telescope which is slung over the shoulder and bobs about, hitting either against sword hilt or pistol, or pinches your back, another thing the strap of the belt comes over the left shoulder, now the sword being the heaviest object necessarily causes a strain to the left across the right, in my belt I have the strap over the right shoulder, and the arrangement of the belt is thus,—a baldric of leather comes over the right shoulder across the breast and back towards the left side where it is made into a frog to receive the sword; the leather crossing the breast is broad about 4 to 5 inches and has a fitting in it, (in the case of an officer's belt for a pocket book, six inches by four); the leather across the back is narrow, about two to three inches, over this and round the waist, but at the same time firmly stitched to the former belt is another belt fastening at the right hip by a simple T hook working on a pivot, this belt is made some five inches broad behind, to support the back (a great comfort in a long ride) and some 4 inches broad in front, on this front leather the soldier or officer will carry all he wants, the soldier his pouch and pistol holster (from the hasp on the right hip) the officer his binocular, pouch and pistol (*see illustration back and front view also arrangement of hasp.*) In my belt, the only metal about it is the hasp and is easily cleaned which, if ever it is adopted, will be a boon to a soldier;

there is more leather about my belt, but it is lighter in every way. I have one of my suggestion made up which I always wear and I have weighed both with the following result:—

The old belt (sowar) with sword, pouch, 10 rounds of Carbine Ball Cartridge weighs 12 to 13lbs.

My belt with articles as above weighs 10 to 11lbs.

Officer's belt (old) with sword, revolver, pouch and binoculars and pocket book weighs 9½ to 10lbs.

My belt for officers with articles as above weighs, 8lbs.

I am so confident that this belt will give satisfaction that I would invite any trial, I rode 89 miles the other day without the least inconvenience, whereas with the old belt my hip bones would have been much hurt by the articles dragging. In this belt every thing is handy and remains perfectly still, and I am certain nothing can exceed the simplicity of the fastening which is done in an instant and undone as quickly without a chance of its slipping.

In conclusion, I beg to point out the differences in weights. A man in heavy marching order, hot weather, not wearing postteens or saddle cloth, armed in the old way and the same man in the same order wearing all my suggestions ; the difference in weight is great and I hope worthy of notice.

| At present. |          | My suggestion. |             |
|-------------|----------|----------------|-------------|
| As          | As       | As             | As          |
| Carbineers. | Lancers. | Lancers.       | Carbineers. |
| 14st.       | 12st.    | 11st.          | 12st.       |

I have had my say and have done, it is a maiden attempt and must stand as it is, if at any future time my poor ideas and hints, benefit the branch of the service to which I have the honor to belong I shall have earned my "Guerdon."

FREE LANCE.



## III.

## THE ORGANIZATION OF THE NATIVE INFANTRY.

IN the several papers on the organization of the Native Infantry, published in the Journals of the United Service Institution of India, I have not observed any suggestions for the application of the principle of the localization of Regiments with several battalions, and the formation of reserves. I would therefore offer with this apology one more paper on the subject.

Most of the present Regiments of Native Infantry bear local or territorial names, such as the Meerut, the Allahabad, the 4th Sikh Infantry, the 21st Punjab Regiment, but with the exception of the Sikh, Goorkha and Punjab Regiments, which may be termed Provincial Regiments, these names bear little reference to the various classes which compose them, as we find all sects, hailing from Peshawur to Behar, represented in them. By means of the local differences of the Armies of Bengal, Madras and Bombay, to which we may add the Punjab, we have hitherto balanced one part of the Native Army against the other, but will not the increasing facilities of communication throughout India tend to remove these differences ? And is it not desirable, that to secure economy of military strength and effective combination of our Forces, these local armies should be amalgamated into one army constituted for service throughout the Empire ? We have the means however in our power, fortunately, of multiplying our security against universal combination, and of neutralizing the dangerous elements in an alien army, by the formation of local regiments, composed wholly of one sect or class, and raised in their own districts. They might occasionally come into collision with opposite class regiments, but a high soldierly spirit would be created in them ; and it is even possible that we might thereby evoke some national feeling in our cause.

Each regiment of Infantry should bear the name of a district from which alone it would draw its recruits, all of one class or sect, should consist of three battalions, the first battalion to be officered with British officers alone, and the second and third to be formed on the Irregular system, as at present.

The battalion to consist of 6 companies, and the double company to become the tactical unit of command in place of the wing as at present.

The first or Regular Battalion to be officered by a lieutenant colonel commandant, 3 captains in command of double companies, and 9 Lieutenants, 6 of whom would command companies. One of the captains to be second in command and *Staff Officer*, carrying on the duties of adjutant, quarter master, and musketry instructor, with two lieutenants as assistants, who might be relieved under regimental arrange-

ments, so as to pass all lieutenants through a course of these duties and fit them for the higher appointments. By having no native officers with this battalion the young British Officers would become better acquainted with the characteristics of the men.

It is very essential that the second in command should be intimately acquainted with the Battalion which he may at any time be called upon to command, and therefore, the constituting his post that also of staff officer of the battalion ensures this knowledge and advantage to him. Moreover, he would take the place of Military Instructor for the whole regiment, and train the young officers, who in the first instance, should join the first battalion. The second and third battalions to be officered by officers especially appointed to them, and who have served with the first battalion, a major commandant, two captains and three lieutenants to each, supplying three officers in command of double companies, and two as assistants to the second in command and staff officer. Each company in the 2nd and 3rd battalions to be commanded by a native officer assisted by his subaltern as at present; and herein lies a great field for improvement, for while much has been done to secure good British officers for the Native army, little has been done towards improving the native officers, who almost as a general rule in the infantry, are too much identified with the ranks, and look to the positions more as for ease and better pay than for the exercise of intelligent command.

The best native officers we have had in our Irregular Regiments are those who came in as commissioned officers, men of good family, position and education; and such of this class still in the service are the most efficient we have, who perform their duty faithfully and well, and command and win greater respect and obedience than the bulk of the men we elevate from the ranks.

Under the irregular regimental system it is imperatively necessary to have active, intelligent and well-trained native officers, and to create such a class with distinct interests from those of the ranks. The sons of old native officers, who deserve well of the State, and of men of a superior class, worthy of government patronage might be appointed to regiments as probationary regimental cadets, to undergo instruction and training. From them we might select a due amount of efficient native officers for our service, and we would find that many young men would gladly enter and submit to vigorous training and military education.

The sons of many gallant and loyal old chiefs in Northern India who in their day have fought well for us, are now leading lives of discontented idleness, because the honourable profession of arms is virtually closed to them, save by entering through the ranks, which family pride forbids them to do. Our levelling rule has swept away all employment for such men. It is politically necessary that we should provide for them, and they by obtaining rank and competence from us would be more faithfully bound to our interests. Due regard to the selection of

such young men for native officers would preserve us against political danger, and we might fairly look for men who had shown themselves above the prejudices of their race, or for the sons of such men. It is only by such a system that "an opportunity will be given of raising the character and position of the native officers, and probably of affording an opening for the employment of natives of higher position," which the Secretary of State for India in the Staff Corps Despatch of 1861 considered "to be an object of considerable importance." Military merit in the ranks should still however continue to be rewarded by promotion of qualified non-commissioned officers to the commissioned grades, but certain professional and educational tests of fitness should be demanded from them.

The strength of the 1st battalion to be 750 of all ranks, that of the 2nd and 3rd battalions 600. The number of non-commissioned officers to each company to be 12.

The regiment of three battalions would thus consist of 1 lieutenant-colonel, 2 majors, 7 captains, 15 lieutenants, a total of 25 British with 24 native officers and 1,950 men, all being interchangeable, so that in case of active or foreign service, two battalions could at once be raised to a war strength regimentally, and one battalion converted into a dépôt. By such an organization two-thirds of the army would always be ready to take the field with full strength, a very important point for such a force as we have in India, when we consider the great extent of territory it has to cover, the long lines of mountain frontier it has to guard and the vast population to keep in order.

Compare with this three battalions under the present organization. Their aggregate strength, 6 field officers, 3 captains, 12 lieutenants, a total of 21 British with 48 native officers, and 2,136 men, but every battalion is generally short of its number of men, and to such a marked extent, that the saving of pay caused thereby has been seen noted as an important sum in the Military Budget Report. Officers come and go between these battalions, with all the disadvantages of being strangers. Under the co-battalion system all this is avoided, and the battalion of the regiment stationed nearest its district centre can recruit and train for the whole, which would render the army as practically effective in numbers as it appears on paper. During the Abyssinian war it took from six to nine months to recruit up to an increased strength of 80 men a regiment and Punjab regiments quartered in Bengal would probably not be able to get one-fourth of that number in that time, but with one battalion stationed near the recruiting source, under the herein proposed local regimental system, the full complement for the entire regiment would speedily be raised, while it would at once furnish an equal number of trained soldiers to the other two battalions.

Some attempt might be made to form small regimental reserve by inducing reliable men to join them after certain periods of good service, with the obligation of rejoining their regiments in time of war or emer-

agency for service *in India*. To assist towards this pensions should be granted for length of service, and not be dependant alone on invaliding as at present, a system which encourages successful malingering to a great extent.

Let the length of service for pension be fixed at 18 years, and permit selected men of 12 years' service and upwards, to enter the reserve on reduced pay, lower than the rate of pension, two years' reserve service to count as one towards pension. They should all be landholders or the tenants in regimental district; should join a battalion for one month's training annually for the first five years, and for one week for the remainder, during which time they would draw full pay; and should not exceed the number of 100 or 150 for each battalion. Such a plan of reserve service with sufficient inducements should be popular in the North West and the Punjab, where so many of our native soldiers own, or have an interest in land and agriculture. It would enable the government to reduce the Army without impairing its strength, and would give the power of expansion to regiments, the want of which has always been so much felt on a sudden call to active service, when we are now obliged to strengthen regiments at the expense of the efficiency of others, a system which is much to be deprecated.

Such a system of pension would give us a far more physically efficient army than we have at present. Any one conversant with the Native Army can tell how in the beginning of his 15th year of service, the soldier who is bent on a pension, begins to prepare himself for invaliding by a bodily "get up" of obscure pains which baffle all treatment when coupled with starvation, and how, having passed the Board, he returns to his village, renews his youth and takes to hard work in his fields.

Good practical regimental schools under trained teachers should be established at once, and education in all ranks encouraged. Recruits should be educated therein as part of their military instruction. The educated Asiatic soldier will be found far safer and more reliable, than the uneducated, whose prejudices and religious fears are liable to be worked upon by designing men, and moreover now with arms of precision in their hands, more of that understanding, coolness, and nerve are required which are alone gained by intelligence and education.

Regarding the pay of the native soldier, which it may not be out of place to refer to here, it is becoming very app rent from the difficulty experienced in obtaining fine recruits, that his pay has not kept pace with the labor market. It would be desirable to render the service more attractive by giving the recruit a free kit on joining the ranks for duty, and the increased pay to the soldier after one and six years instead of after six and ten years.

Some such changes, as we have attempted here to sketch out, are called for in our native infantry, before its best uses can be developed

for efficient service at home or abroad. The system of having British staff officers performing the administrative, and supervising the regimental duties of each regiment, is sound and works well, when they are specially selected, but the apparent defect in it, as applied to the whole Army, is the want of the field of selection, of the training ground ; therefore the organization of one-third of the regiments on the regular system with British officers alone in it, would supply this want, and give an available reserve for every service.

By forming class regiments of three battalions and by devoting great care to the selection and education of the native officers far greater efficiency would be secured and less clashing of interests, the moral force of the Army would be greatly increased by a higher standard of "esprit de corps," and a stronger sense of duty being created in all ranks, confidence in their leaders instilled into the minds of the soldier, and martial pride, stricter discipline, and a mutual bond of interest sustained among officers and men throughout, and anything that is to be gained by us, in the fidelity of a mercenary army by the judicious opposing of creed to creed, would be more likely to be secured.

J. J. H. GORDON, LIEUT.-COL.,

*29th Punjab Infantry.*



#### IV.

### ON THE COMMISSIONED & NON-COMMISSIONED RANKS OF THE NATIVE INFANTRY & HOW THEY MIGHT BE RE- ORGANIZED WITH A VIEW TO INCREASED EFFICIENCY.

#### *Prefatory.*

1. It will be generally acknowledged that in these days of improvement, in all matters connected with the army at large, some attention might be advantageously bestowed on the condition of the body of men who form the link of communication between the native private and his British officer.

#### *Intention of Paper.*

2. The intention of this paper is to endeavour to prove, as briefly as possible, that a great deal might be done towards the attainment of this object, set forth in the heading, without involving Government in any additional expense.

3. Let us therefore commence by considering separately the commissioned and non-commissioned grades of the native army, beginning with the body of men styled native officers.

#### *Characteristics of present body of Native Officers.*

4. Most British officers who have bestowed any thought or attention on the organisation of the Native Infantry, or who have served any time with that branch, will testify to the fact that the above class as a body, although it comprises many gallant and intelligent officers, contains also a large leaven of men, who although probably respectable and well-conducted are quite unfitted from want of energy, zeal and intelligence to worthily fill the high position in which they are placed by Government. It would be mere waste of time and space to enlarge as fully as we might, on the many shortcomings of this class; they are too well known already, suffice it to say that we are confident, that a majority of the best British officers of the Native Infantry will share with us the belief, that a reduction in the present number of native officers in a battalion, might well be made provided a proportionate increase was made in the grades which more urgently require such addition.

#### *Non-Commissioned Officers.*

5. Let us now consider the next grade of the Native Army, that of non-commissioned officers.

This is a class, on the intelligence and efficiency of which the welfare of a battalion in a great measure depends, and we think that the present body is far inferior both in numbers and efficiency to that it might be made.

A non-commissioned staff maintained in excess of the complement of company non-commissioned officers, and which forms such an important body in a British regiment is most inadequately represented, in a native one, and after deducting the men, who are employed in discharging some of the functions of such a staff, we find the number of non-commissioned officers available for duty, considerably reduced. Let us now proceed to see if by a re-distribution of the sum sanctioned by Government for the pay of the grades we are treating of, it is possible to improve on the existing state of affairs.

*Guiding maxims in effecting re-distribution.*

In carrying out this re-distribution we profess to be guided by the maxim, that a reduction in the number of Native officers, and a proportionate increase in the number of non-commissioned officers, with better pay to the staff portion of them are the objects to be attained.

*Points to be considered in carrying out scheme.*

7. The following points must be attended to, in carrying out such a scheme.

1st. That the number of native officers while reduced from its present strength should still be sufficient for carrying on all duties, and matters of discipline, and for affording a good prospect of promotion for the encouragement of the aspiring native soldier.

2nd. That the increase in the number of non-commissioned officers should be made the most of in every way possible.

*Reduction in number of Companies.*

The first step in our opinion to be taken towards the attainment of these ends, should be to reduce the number of companies in the battalion from eight to six, re-distributing the number of privates in each company so that the present complement of a regiment should be maintained intact.

An organisation of six companies would for many reasons, which need not here be dwelt on, be preferable to the present one of eight. It would suit the present strength of a native regiment admirably, and would be equally well adaptable to any increase which may be made hereafter.

We now come to the number of native officers to be maintained, this should be fixed at two per company as at present, or a total of twelve per battalion, and we hold that this number would in all respects be found ample for carrying out all duties, etc., and would at the same time be large enough to afford reasonable hope of advancement to the subordinate ranks. This latter condition would be especially fulfilled by the fact that, as will be seen by the following statement, we give a higher rate of pay than at present to nearly all classes of Native officers



More care should be expended, than is often the case now, in the selection and training of men to fill the commissioned ranks. The bugbear of seniority should be cast to the winds, and the fact of a man's having eaten the Government salt for a long period of years, should not be looked on as any claim to advancement, but rather the contrary, unless he has devoted his time to the acquirement of a good knowledge of his profession or has performed some exceptional and valuable service which cannot be overlooked.

Much might be written on the best mode of training the native officers of the army to fit them for their work, but it is not the purpose of the present paper to deal with this subject, although it is one well worthy of attention and discussion.

Now for the second point in our scheme, namely, the increase in the number of non-commissioned officers, and the most effective distribution of this increase.

We consider that the establishment of this class for a native battalion should be as follows, viz :—

1st.—A non-commissioned staff consisting of—

|                                 |          |   |
|---------------------------------|----------|---|
| Havildar Major                  | ...      | 1 |
| Assistant ditto ditto           | ...      | 1 |
| Drill Naick                     | ...      | 1 |
| Havildar instructor of musketry | ...      | 1 |
| Assistant ditto ditto           | ...      | 1 |
|                                 | Total... | 5 |

2nd.—A non-commissioned establishment to each company—

|                                    |     |   |
|------------------------------------|-----|---|
| Pay Havildars                      | ... | 1 |
| Havildars (1 to be color Havildar) | ... | 6 |
| Naicks                             | ... | 7 |

or a battalion total of

|             |          |    |
|-------------|----------|----|
| N. C. Staff | ...      | 5  |
| Havildars   | ...      | 42 |
| Naicks      | ...      | 42 |
|             | Total... | 89 |

This gives an increase of nine non-commissioned officers over the present establishment, supplies a much wanted staff, and leaves a greater number of non-commissioned officers available for regimental duties. It will also be seen by the subjoined statement that the posts of Havildar Major, etc. etc. are made really valuable ones in point of pay, and that great inducement would be held out to the soldier to educate himself for positions which require both intelligence and soldierly qualities from the man who wishes to fill them.

*Present organization of Commissioned and Non-Commissioned grades of a Native Battalion.*

|                                       |     |         |         |
|---------------------------------------|-----|---------|---------|
| 2 First class Subadars at Rs. 100     | ... | Rs. 200 | 0       |
| 2 Second ditto ditto at Rs. 80        | ... | ...     | 160 0   |
| 4 Third ditto ditto at Rs. 67         | ... | ...     | 268 0   |
| 4 First class Jemadars at Rs. 35      | ... | ...     | 140 0   |
| 4 Second ditto ditto at Rs. 30        | ... | ...     | 120 0   |
| 1 Subadar Major's allowance at Rs. 25 | ... | ...     | 25 0    |
| 8 Pay Havildars' ditto at Rs. 5       | ... | ...     | 40 0    |
| 8 Color ditto ditto at Rs. 2          | ... | ...     | 16 0    |
| 1 Drill ditto ditto at Rs. 5          | ... | ...     | 5 0     |
| 1 ditto Naick at Rs. 2-8              | ... | ...     | 2 8     |
| 40 Havildars at Rs. 14                | ... | ...     | 560 0   |
| 40 Naicks at Rs. 12                   | ... | ...     | 480 0   |
| Total Rs....                          |     |         | 2,016 8 |

*Proposed organization of Commissioned and Non-Commsioned grades of a Native Battalion.*

|                                        |     |         |         |
|----------------------------------------|-----|---------|---------|
| 1 Subadar Major                        | ... | Rs. 130 | 0       |
| 2 First class Subadars at Rs. 100      | ... | ...     | 200 0   |
| 3 Second ditto ditto at Rs. 70         | ... | ...     | 210 0   |
| 3 First class Jemadars at Rs. 45       | ... | ...     | 135 0   |
| 3 Second ditto ditto at Rs. 35         | ... | ...     | 105 0   |
| 1 Havildar Major                       | ... | ...     | 26 0    |
| 1 Assistant ditto                      | ... | ...     | 16 0    |
| 1 Drill Naick                          | ... | ...     | 14 8    |
| 1 Havildar Instructor of Musketry      | ... | ...     | 24 0    |
| 1 Assistant ditto                      | ... | ...     | 16 0    |
| 6 Pay Havildars at Rs. 20              | ... | ...     | 120 0   |
| 6 Color Havildars' allowances at Rs. 2 | ... | ...     | 12 0    |
| 36 Havildars at Rs. 14                 | ... | ...     | 504 0   |
| 42 Naicks at Rs. 12                    | ... | ...     | 504 0   |
| Total Rs....                           |     |         | 2,016 8 |

*Duties of each rank under proposed organisation.*

8. We will now proceed to give a short outline of the duties to be performed by each grade under our proposed organisation, commencing with

*The Subadar Major.*

This officer holds the most important position of all the natives in the regiment, he is or should be, in every way, the native representative of it, and it is a *sine quâ non* that he should be a man whose force of character, high intelligence and general respectability, secure him the necessary influence over all ranks beneath him.

He should be capable of affording valuable support to the Commandant in all matters in which his assistance is required, and should be as at present the proper channel for the reception of reports from other native officers, &c.

No means should be omitted to make his position one to be looked up to by all the natives under him, and to aid in securing this end we consider that his rank of Soobahdar Major instead of being a mere appointment, should be made into a separate and superior commissioned grade of its own, as distinct from the rank of Soobahdar as the latter is from that of Jemadar.

This and the good pay (Rs. 130 per mensem) attached to it would make this position a more markedly superior one than it is at present.

Most if not all of the mere routine duties of native adjutant as at present performed by the Subadar Major should be delegated to the Havildar Major, and we consider it a point worth discussion whether daily attendance at the drills, etc. might not also cease to be a part of this officer's duty, assistance to the Adjutant when required, (which would be very rarely the case with an efficient non-commissioned staff) being afforded by each of the native officers in turn, all of whom ought to be fully qualified for such duty.

The Subadar Major should command his company as at present in addition to performing the peculiar duties of his rank.

#### *Company Officers.*

The Subadars and Jemadars of companies should perform the duties at present laid down for them, they should also as we have indicated above be a carefully chosen body well fitted for the responsibilities the charge of a company involves, and their training on first getting their commission should be much more carefully carried out than is often the case now-a-days.

#### *Non Commissioned Officers, the Havildar Major.*

The Havildar Major should be the leading non-commissioned officer of the regiment, he should correspond as nearly as possible with, and carry on the same duties as the Sergeant Major of a British battalion, he should be selected for special qualities of smartness, and knowledge of drill and duty, be able to read and write with facility, and be a man of good character, he should perform all the routine duties at present carried on by the Subadar Major, and he should keep and be responsible for the correctness of all rosters of duty.

He should also be responsible to the Adjutant for the drill and training of all recruits, or of soldiers sent from time to time for instruction.

*Assistant Havildar Major.*

The assistant Havildar Major would as his name implies aid the Havildar Major in all his duties, and would *ex officio* act for him in his absence, he should be specially selected with regard to his fitness for filling the post of Havildar Major on its falling vacant.

*Drill Naick.*

The Drill Naick should perform the duties at present laid down for him in the standing orders of the army.

*Havildar Instructor of Musketry.*

The most important post, which the present organisation makes no provision for, should be filled by the Havildar who had most distinguished himself in the acquirement of a knowledge of the theory and practice of musketry, he should assist the wing officers in their duties, and would be responsible that their orders in his branch of instruction were duly carried out, and he would be further responsible for seeing that all backward and stupid men, especially non-commissioned officers were made thoroughly to comprehend the instructions conveyed by wing officers, in their lectures on musketry.

*Assistant Havildar Instructor of Musketry,*

The Assistant Havildar Instructor would be charged with the preliminary training of recruits in his particular branch, under the supervision of the Adjutant, when not required for this purpose, he would assist the Havildar Instructor in his work generally.

The want of two non-commissioned officers such as above is much felt in every regiment, and men should be induced to qualify for the posts as soon as possible, but as the equipment of the Native Army with the Enfield Rifle is recent and its training as yet imperfect, these appointments should not be filled up until the commandant is sure that he has secured two men competent to hold them.

Going through a complete course of instruction with a British corps and giving proof that they had fully grasped that they had been taught there, should be considered as indispensable qualifications for candidates for both these positions.

*Accoutrements of Senior Non-Commissioned Officers.*

The two senior of the above non-commissioned officers, *viz.* the Havildar Major and the Havildar Instructor of Musketry should wear swords as do the corresponding ranks in a British battalion.

*Pay Havildars.*

Pay Havildars would perform the duties as present devolving on them, and would be assisted, as is now the custom, by Kote Lance Naicks.

*Non-Commissioned Officers generally.*

The general body of non-commissioned officers would perform the duties as at present laid down for them.

*Summary.*

9. The general intention of the above paragraphs is to shew, *first*, how in our opinion more work could be obtained for Government for the sum at present sanctioned for regimental commissioned and non-commissioned establishments; *secondly*, to point out which is the class which can best be spared for reduction and which is the best way of effecting that reduction, and thirdly to indicate the most effective way of employing the surplus thereby placed at our disposal by the creation of an efficient non-commissioned staff, which in addition to its other advantages opens in each regiment a number of appointments any of which forms an excellent school to fit men for the higher duties of really competent Native officers. Before closing we think it worth while to remark that a possible objection which might be raised against our proposed scheme, is the stagnation of promotion to the Commissioned grades which would ensue until the present excess of Native officers had been absorbed.

To this we can only reply that every scheme must have its drawbacks, but we do not consider this a very serious one, as the yearly transfers to the Pension establishment are sufficient in most corps to arrange for all surplus numbers being invalided at the furthest, in the space of two or three years.

Moreover, it would be easy for Government to facilitate their retirement by the assembly, wherever deemed necessary, of special invaliding committees.

With regard to the increase made to the already overstocked pension establishment by such a course, we would submit that such increase would be only temporary; and secondly, that it would be more than counterbalanced by the decrease in number of Native officers to be pensioned for the future.

*Conclusion.*

We have now come to the end of our paper, we are fully aware that the subject treated of would well bear enlarging on, and that abler pens than ours would have done more justice to it, but at the same time we would impress on our readers, the difficulties we have to contend against in confining ourselves in our treatment of the question, to the limit of expenditure at present sanctioned by Government.

We hope, however, that we have at any rate said enough to show clearly any advantages our proposed scheme may possess, and we conclude by submitting it to the criticism of our brother officers of the Native Army, as the result of thoughts on the subject by

**TWO SOLDIERS.**



## V.

## ON THE COMBINATION OF HORSE ARTILLERY AND CAVALRY.

BY LIEUTENANT A. E. TURNER,

*Royal Horse Artillery.*

THE campaigns of 1866 and 1870 have clearly proved that cavalry however good can effect nothing against good infantry unbroken and armed with the modern arms of precision, and that it is nothing short of madness to hurl it against batteries in position or squares as had often previously been done with perfect success, therefore although the usefulness of cavalry has by no means diminished the mode of its employment has somewhat changed. As horse artillery is the branch of the service which is intimately connected with cavalry, it follows that every change affecting the latter must in a greater or less degree influence the tactics of the former, horse artillery can no longer gallop up to within a few hundred yards of the enemy and pour in case to prepare the way for the cavalry unless it seeks utter annihilation, which would infallibly befall it before it had delivered one round, for taking into consideration the time required, to unlimber, load, adjust elevation, &c. ; a sub-division of good infantry would produce more effect than a battery at case shot range. The above argument only applies to good infantry whose steadiness has not been shaken ; against native troops armed with inferior weapons, against disorganised masses, and finally against troops in rapid or confused retreat, the old system of opening at short ranges, as at the battle of Friedland, (where the battery which won the day opened at 400 and finally advanced to within 150 yards !) might be carried out with perfectly good results.

The shot sphere of infantry fire, that is the space of ground within which its fire is effective is about 900 yards, the effectiveness of course increasing as the range diminishes ; cavalry should, therefore never remain motionless within this space ; and artillery unless it be necessary to sacrifice it for the sake of holding its position to the last, should if the enemy approaches it to within this distance, limber up and retire to another and more remote position.

Another reason that artillery should not now advance to close quarters is that rifled guns are not nearly so effective at short ranges, as the old smooth-bore, the calibre being smaller, and the guns requiring more care and time in laying ; therefore by so employing them, no advantage is gained from their peculiar power, and while they are sacrificed, a comparatively very small amount of loss is inflicted on the enemy. When the time comes for the way to be prepared for the action of the cavalry, the horse artillery should move to the front and take up its position somewhere beyond 900 yards of the infantry to be attacked, it should direct its fire at once steadily on the point of attack, from which nothing should divert it, not even if the battery should happen to fall within the shot sphere of the enemy's artillery fire, or if threatened with an attack by his troops, for it is the duty of the escort and not of the

battery to direct its attention to this latter contingency. The cavalry as soon as it falls within the enemy's fire, which it should not do till it is perceived that he is shaken and unsteadied by the effect of the artillery ; should at once deploy and move forward to the attack. The artillery should direct its fire on the object of the cavalry attack till it becomes masked by the advancing cavalry, the commander of which should direct his squadrons as far as practicable in such a direction so as not to interfere with the artillery fire as long as he can avoid it.

As soon as there is danger of the cavalry being hit by the fire of its own artillery, the latter should remain in its position, and direct its fire at anything within its range, especially on any of the enemy's artillery which could harass the cavalry in its advance ; and remain as a screen for it to retire upon should its attack fail ; if however it prove successful, and the troops, which it has charged, become broken and demoralized, then and not before should the artillery limber up and advance to close shot ranges, and complete their defeat, joining in pursuit, and taking up every good position and pouring in as heavy a fire possible to prevent their reforming.

One of the best formations for guns in position in advance and on a flank should the nature of the ground allow of it, is that of *échelon* of sub-divisions, the outer and exposed flank thrown back, and the escort on this flank some little distance in rear.

We are quite aware that the question of the horse artillery remaining stationary, after its fire becomes masked by the cavalry is an open one, and that many officers consider that it should at once move forward and take up a fresh position in advance from which the object of the cavalry attack can be seen, and still further shake it, by its fire, at short ranges ; but we venture to advance the following reasons against this argument ; *first*, the cavalry should not move into the shot sphere of the enemy till he is so far shaken that he cannot receive them with a steady fire, or else destruction must be the result. *Secondly*, none of the effect of the fire of the guns should be lost, and if the artillery is to move forward from its position and take up a fresh one so as to fire on the troops to charge which the cavalry is advancing, it must limber up and do so before the latter comes up to it, or it would palpably be too late to come into any position from which the fire would not be masked by its advance ; and therefore in this case some few rounds from its first position would be lost and as by that time the range would be well known, and the correct elevation ascertained, I think it must be allowed that the loss of these last shots would be but badly compensated for, by the chance of being able to fire a few shots at close quarters at a new range ; Von Moltke says " Every change of position requires a new calculation of the range, and on the accurate adjustment of this success depends ; on account of their extensive range it is possible for properly placed rifled guns to be effective from one and the same position in all the different stages of a battle ; it is not necessary to advance a few hundred yards in order to reach the enemy, for this object is gained by



altering the elevation without essentially diminishing the accuracy of the fire."

Guns when in motion are useless, and therefore the time taken to move from the first position to another would be time, at a very critical point of the engagement, utterly thrown away ; and besides after a rapid movement, and owing to the excitement consequent on coming to close quarters with the enemy, it is probable that the first shots from the new position would be very wild, and that before a second round could be fired, the cavalry would be mingled with the enemy, and further action on the part of the artillery precluded.

*Thirdly*, Supposing the charge to be defeated, and the cavalry thrown into confusion and compelled to make a rapid retreat, the guns would not only not be in a position on which the cavalry could retire for protection, but they themselves would run the greatest risk of being captured.

To support the first argument, namely, that cavalry should not move into the shot sphere of infantry till it is shaken and unsteadied by artillery fire, I quote an account of an experiment at Chalons-sur-Marne, given by Besançon in his " War, with the tactics of the three arms" which is as follows " an erection of planks 100 metres long and 3 metres high to be placed as a target ; 600 metres in front were arranged 100 infantry in two ranks, at the right of the target was stationed a squadron of Hussars of 100 men. At a given signal the infantry commenced firing, the hussars charged at a gallop and ran over the 600 metres in a minute. During this time the infantry had put 180 balls into the target, one must conclude from this that 100 horsemen would have been struck down, therefore cavalry cannot struggle against the fire of unbroken infantry."

To recapitulate ; the duties of horse artillery combined with cavalry in the attack are ; *first*, to move into position at a distance over 900 yards from the object of the cavalry attack, and pour a steady and increasing fire upon it till it becomes masked by its own cavalry ; and not to be diverted from directing its fire on this object ; even if it itself becomes the object of artillery fire, or attack on the part of the enemy.

*Secondly*, to remain in its first position till the result of the cavalry charge is manifest ; aiding the latter indirectly by firing on any of the enemy's troops, which could harass it.

*Thirdly*, in case of the charge being defeated, to endeavour to check the advancing enemy ; and cover the retreat of the cavalry, its position forming a point d'appui for it to retire upon.

*Fourthly*, in case of the charge being successful, and the enemy broken, to advance to short ranges, and complete their discomfiture by pouring in case, and prevent their reforming, by never ceasing to harass them with a constant and galling fire.

F

*Duties of Horse Artillery with the Advanced Guard.*

The artillery of the advanced guard is usually horse artillery, for owing to its mobility it can, should the advanced guard be beaten back on the main body, hold its position with safety, in order to cover the retirement and check the advance of the enemy longer than heavier equipped and therefore less mobile batteries.

On the advanced guard falling in with the enemy the horse artillery should at once move out to the front, take up as good a position as possible and open fire in order to engage the attention of the enemy, check his advance and enable the commander of the advanced guard to form his troops up under its cover ; and should the enemy be found so strong that he feels bound to fall back, the artillery should remain in its position as long as possible harassing the advancing foe, by so doing not only affording protection to the troops of the advanced guard, but giving additional time to the commander of the main body to make his dispositions for the coming fight.

The battery should have a strong escort of cavalry in this case, which should remain in rear of its exposed flank protected by any available cover, though never removed so far to the rear as not to be able to charge in time any body of the enemy attacking the battery.

The former would never charge across the open in the face of the guns, unless protected from their fire by some objects till close to them ; and as it is the first axiom in choosing a position in the field for artillery that guns should not have within their range objects which could give shelter to an advancing enemy, it is next to impossible, that a position with such objects within its range would be selected, and we may take it for granted that he will attack the exposed flank, which, as before stated, should be thrown back in échelon, then the escort from its position in rear of this flank, could charge and take in flank any troops attacking the battery ; while the guns being in échelon, the direction of their fire could be changed at once, and be brought to bear on the assailants.

*Horse Artillery with the Rear Guard.*

In case of a retreat the object of the rear guard is to check pursuit, thereby protecting the main body and gaining time.

The horse artillery having taken up a position, from which it can fire on the enemy's columns should retain it, till in danger of being captured, in the meantime other batteries are moved back to fresh positions, so as in their turn to again check the enemy, form a screen for the first batteries to retire on, and so on ; advantage being taken of every good position capable of defence to harass and cause loss and delay to the pursuing army.

*Horse Artillery on the march with Cavalry.*

I am not aware that in our service there are any directions on this

subject, the plan pursued by the Prussians would seem a very good one, which is as follows : The horse artillery attached to the cavalry march behind the leading squadron of the cavalry ; the advantages of this are, that when the time for action arrives the movements of the battery are masked by the cavalry in front, which becomes its escort as soon as its position is taken up ; while that in rear is close at hand ready to deploy and attack, when the work of the artillery has sufficiently prepared the way for its advance.

It does not appear expedient to distribute the whole of the horse artillery among the cavalry brigades, for in many cases, when the latter is rapidly reconnoitring in front or rear, or gaining intelligence, as the Prussian cavalry did on the frontiers of France immediately war was declared in 1870, it is better without artillery, for its duties are to feel and not to fight. Again the real effect of artillery fire is so infinitely greater when it is concentrated in masses, that, as Jomini says, " at least half the horse artillery should be kept in reserve," in order that it may be carried as rapidly as possible to any threatened point, or to support a grand attack of cavalry which by its success would appear to offer decisive results.

The battle of Eylau is a notable instance of a crushing defeat having been averted by the employment of fifty horse artillery guns, which had been held in Reserve, in which Benningsen the Prussian Commander-in-chief, when his centre was pierced and broken, brought up, repaired the gap and repulsed the enemy. Friedland, Wagram and in our own time Woerth are also instances of what the fire of a number of guns concentrated can effect. Horse artillery from its mobility and the rapidity with which it can be moved and therefore concentrated is the branch of the service best suited for the reserve. It is hardly necessary to say that except in very exceptional circumstances, less than a battery should never be detached, and these are ; when small reconnoitring parties are sent out and it is the intention to attract the attention of the enemy ; also when any object which is giving shelter to small parties of the enemy is to be destroyed, and its defenders driven from it ; when the advanced guard of a single brigade goes to take up its position for the night, or finally when a chain of posts have to be defended ; but in all these instances except the last, the guns should never remain away from their batteries and should return immediately the service on which they are sent is completed.

• As an example of detached field guns being employed in the last instance, Napoleon's line of communication in 1812 may be mentioned, when it extended from Praga on the Vistula through Kowno and Grono on the Niemen to Smolensko and Moscow ; at intervals along this line of operation, he established posts ; defended by light field guns with a small escort ; by this and other precautions his communications were so secure, that up to the time of his retreat, not a single convoy was intercepted ; the above mode of the employment of field guns is so uncommon as almost to be foreign to the subject in hand ; it is merely given

to illustrate one of the very few instances in which it is legitimate to detach guns from the batteries to which they belong.

It is needless to observe that the dispositions previously mentioned for the combined action of cavalry and horse artillery in the attack, refer only to an attack on infantry ; the power of cavalry lies only in the offensive, and it would never remain motionless within the range of artillery ; so that the only time for the action of horse artillery in the attack of cavalry on cavalry would be the very few minutes during which the hostile bodies were rapidly moving to the rencontre ; after the charge however, according as it was successful or not, the artillery would join in the pursuit ; or cover the retreat of its own cavalry and endeavour to check the advance of that of the enemy as before described.

#### *Employment of Horse Artillery at Peace Manœuvres.*

Owing to the great distance from the enemy that artillery can take up a position, up to 2,000 yards and more, and yet give an effective fire ; at peace manœuvres when there is nothing to show the effect of the fire, it may be impossible for the enemy aimed at to know that they are being fired at at all, the guns if slightly entrenched or protected by natural cover, being all but invisible to them ; the umpires moreover would have great difficulty in estimating the true effect of the fire at these long ranges, which would constantly exist in real warfare ; as was of en felt at the late manœuvres in Hampshire and in consequence of which the position of the batteries was changed far more often and the fire directed at much shorter ranges than would have been expedient or safe in an actual engagement. These remarks apply particularly to horse artillery which is often called upon to take up positions far in advance, and the mode of its employment should differ as little as possible from the rules laid down for its use in presence of a real enemy ; more cannot be done.

Though a sham campaign can only be assimilated in a very partial degree to a real one, the value of the former cannot be too highly estimated, training as it does every branch of the service, and showing what is most important of all, the combination of one with another, which can only be done in Camps of Exercise where large bodies of troops are brought together, while at the same time such slight difficulties and anomalies as those above alluded to, are more apparent than real, for when they are known and the reason of their occurrence duly appreciated there would be little fear of their not being avoided in real warfare.

We cannot conclude without noticing the very important general order relative to the employment of artillery in the Field, which was issued just previous to the late home manœuvres, which gave such general satisfaction to all artillery officers. Though it did not affect such changes in the relative position to one another of horse artillery and cavalry, as it did to that of field batteries and infantry ; still by removing from the minds of the officer commanding the horse artillery batteries all anxiety of exact dressing and alignment on the cavalry, as laid down by regula-

tion, it enabled them to devote their attention to taking up the most favourable position for their guns, while at the same time it unshackled the hands of the cavalry commander by freeing him from the care of subordinating his tactics for the sake of the safety of guns, which by their proximity could only hamper his freedom of action.

A new era has been opened for our artillery tactics, and certainly since the time of Frederick the Great, who first organized horse artillery and abolished battalion guns, no such improvement has taken place.

NOTE.

Books from which reference has been taken ;

" The Art of War." Jomini.

" The Principles and Practise of Modern Artillery." Owen.

" The employment of Field Artillery in combination with the other Arms." by Kraft Prince of Hohenlohe Ingalfingen, translated by Capt. F. C. H. Clarke, R.A.

" War with the tactics of the three Arms; Besançon, translated by Lieut.-Col. Ingelfield, R.A.

" The Minor Tactics of Field Artillery," Prize Essay R. A. Institution 1871, by Lieutenant Hine, R.A.

" Regulations for the conduct of Peace Manœuvres," &c., translated from the German by Capt. E. Baring, R.A.

" The Theory of War." MacDougall.



## SELECTION.

## THE PRUSSIAN WAR-GAME.

By the courtesy of the Superintendent of Garrison Instruction we are enabled to publish the following extracts from the "Rules for the conduct of the War Game," translated by Captain E. Baring, Royal Artillery, Private Secretary to H. E. the Viceroy of India. Portions of these rules were read by the Superintendent of Garrison Instruction in the Lecture delivered by him to this Institution on the 17th September, but as many members were precluded by the crowded state of the room on that occasion from hearing them, and as these rules will have an important bearing on the approaching manœuvres at the Camp of Exercise, it is considered desirable to publish them *in extenso*. ~~We also give~~

## NOTICE.

IN consequence of an accident while printing, the specimen sheet of the Map for the War Game cannot be given with the present number.

can unless the disparity of numbers, the difference in the reciprocal position of the opposing forces, or some other equally important condition gives advantages to one side of such a nature as to render success on the other side impossible. The object which it is sought to attain in the application of the Table is to represent, as far as possible, these *chances of war*, or in other words, to represent in the mathematical language of favourable and unfavourable chances the degree of probability with which success or failure can be predicted under various conditions. The method of applying the Table is very simple.

It will be observed that the Table is divided into three principal columns, headed respectively red, faces of the die, and blue.\* The two outer columns are somewhat similar. The one marked red, intended to be used only by the force which is characterised by that colour, is divided into two sub-columns, headed "Number of Index Points" and "Odds for or Against." The other outer column, sub-divided in a simi-

---

\* Red is represented by vertical, and blue by horizontal shading.

lar manner, is for the use of the force having blue for its distinguishing colour.

These vertical columns are separated across the diagram by horizontal lines enclosing spaces in which are marked the different combinations of "odds" which can occur. On examining the arrangement it will be seen that the column for red is marked 5 : 1 against, 4 : 1 against, and so on through the series ending with 5 : 1 on.

In the same way the column for blue is marked 5 : 1 on, 4 : 1 on, and so on through the series ending with 5 : 1 against.\*

To decide any question by means of the Table it is in the first instance necessary to determine the number of Index Points + or - with which the thrower is to cast the die, or, in other words, what are the chances for or against the success of the particular enterprise in question.

The method of determining the chances under different circumstances is laid down in paragraphs 14-46.

The column marked "Faces of the Die" is sub-divided into 6 sub-columns corresponding to the faces. The letters R. T. D. are abbreviations for repulses defeats, and total defeats ; the numerals refer to the losses of the defeated side in men.

The numbers above the letters refer to losses per battalion, those below per squadron. These losses are those caused by the *arme blanche*, i.e. by the bayonet or sabre ; in order to estimate the losses caused by previous fire, reference must be made to Table B. Thus, if the odds are 2 : 1 against red, or he throws with - II Index Points and the die turns up : , the side represented by that colour, or blue in this case, wins and defeats red, inflicting a loss on his troops of 18 men per battalion, or 4 men per squadron, if turns up, red wins and repulses blue, with a loss to blue of 12 men per battalion or 2 men per squadron.

In order to make the foregoing description more clear, it will perhaps be as well as to give a couple of examples of the manner in which the Table is applied ; in the first instance, however, it is necessary to state that in so far as mere numerical strength is concerned, a battalion of Infantry column is supposed to have the same chances of success as a regiment of Cavalry or as 4 companies of Infantry† in extended order, or as half a battery of artillery.

### Example 1.

Eight blue squadrons surprise and attack a red battalion in column.

\* The arrangement is obvious, for supposing red to cast the die, and it is decided that he is to throw with - II Index Points, or in other words that the odds against the success of his enterprise are 2 : 1, it is evident that the odds in blue's favour are 2 : 1 on, which, by carrying the eye across the table, is seen to be the case.

† The Prussian Companies are equal to two Companies of a British Regiment.



In applying Table A in order to decide on the success or failure of the attack, what number of Index Points should be used ?

In so far as numerical strength is concerned a battalion of Infantry is considered to have the same chances of success as 4 squadrons; in this case, therefore, as there are 8 squadrons opposed to one battalion of Infantry, the chances are 2 : 1 against the Infantry, or the number of Index Points the red Infantry should have would be—II. But according to the rule laid down in paragraph 33, when Cavalry attacks Infantry in column, it loses 4 Index Points, or which is the same thing, the Infantry gain 4 Index Points; therefore the number of Index Points the red Infantry should have would be  $-2+4=+II$ . But by the rule laid down in paragraph 26 troops which are surprised forfeit 2 Index Points, therefore the number of Index Points the red Infantry have must be reduced by 2, the final number is therefore  $+2-2=0$ , or the "odds" are even for or against the enterprise, and if the die turns up ·, ··, or ··· blue wins, if ··, ···, or ···· red wins.

As regards the loss sustained by the Cavalry in attacking from the fire of the Infantry, it may either be calculated by means of table B or the rule laid down in par. 33 may be applied, that is to say, that a loss of 15 men per squadron is supposed to be incurred if the attack was successful, or a loss of 20 men per squadron if unsuccessful.

If the charge of Cavalry is successful, and the men remain in conflict with the Infantry, the latter, by virtue of the rule laid down in par. 33, lose a quarter of their strength for every move (that is, for every period of two minutes), during which the *mêlée* lasts; the Cavalry lose 5 per squadron for every move during which the *mêlée* lasts.

#### *Example II.*

Three red squadrons of Cavalry which have been much shaken are attacked by two intact blue squadrons; the action takes place on a hill which slopes about  $10^{\circ}$ ; the force of 2 squadrons occupies the lower the opposing force the higher ground.

In deciding the result of the action by means of the Table, what number of Index Points should be used ?

If both forces were intact it is clear that the chances of success would be unfavorable to the force which is numerically inferior in the proportion of 3 : 2, hence the blue squadrons would throw with  $-I$ ; but this latter force gains an advantage of one Index Point from the nature of the ground (*see* paragraph 38,) and of two further Index Points from the fact that the red squadrons are much shaken.

Hence the final number of Index Points for blue would be  $-1+1+2=+II$ , or the odds are 2 : 1 on blue.

As the Index Number employed in this case is  $+II$ , it is necessary, in the first instance, to determine, by means of the Table, whether the

G

decision takes place in the same move as that in which the charge is effected, or whether it is delayed to the subsequent move (*see* par. 39.) Blue is anxious that there should not be any delay, therefore if ; ;, : : or : : (blue colours) turn up the result is to be taken by that very throw, but if · or : : (red colours) turn up then the decision will not take place that move.

In the next move the die is again cast to determine which side is victorious ; suppose : to be thrown ; a blue square stands vertically beneath ;, blue is therefore victorious and defeats the force of three squadrons, inflicting a loss of 4 men per squadron for each move during which the *mêlée* lasts ; that is with a total loss of 8 men per squadron ; the 2 victorious squadrons suffer a loss of 4 men per squadron by virtue of the rule laid down in paragraph 39.

Now, suppose the victorious Cavalry to pursue for a period of 2 moves, the beaten party would in these 2 moves incur a further loss of 16 men per squadron, and would then be deemed "totally defeated" ; that is to say, by virtue of the rule laid down in par. 22, it would not be capable of offering resistance until 8 moves had elapsed, or of re-assuming the offensive till 16 moves had elapsed. The victorious Cavalry would incur a loss one-sixth as great as the beaten party ; that is to say, they would lose 3 men in the pursuit. If, immediately after the pursuit were discontinued, the pursuers were attacked by another force, the Umpire would have to decide whether the former were to be considered as "slightly shaken" or "much shaken" (par. 24). Probably he would decide that they were "much shaken."

*Table B for calculating the lossess caused by Infantry and Artillery Fire.*

12. Table B is intended to afford a means of calculating the losses occasioned by the fire of Infantry and Artillery. In the case of the Artillery, the numbers given in each square represent the loss occasioned during a period of one move\* by a battery of 6 guns ; in the case of the Infantry, the numbers given in each square represent the losses occasioned by one battalion in line, or by 4 companies in extended order during a period of one move. Troops under cover or in extended order suffer only one-third of the loss given in the Table ; Infantry *in line*, when exposed to the fire of shrapnel or common shell incur one-half of the loss shown in the Table ; on the other hand, Cavalry suffers a loss one-fifth greater than that given in the Table. The number of troops against which the fire is directed does not, of course, affect in any way the loss occasioned in a given time, provided the aim be correct, and has not therefore, to be considered in applying this Table, but the *formation* is a matter of great consequence, and must always be taken into account.

The losses occasioned by a greater or less force than a battalion in

---

\* That is to say, during 2 minutes.

line, 4 companies in extended order, or a battery of Artillery, can of course readily be calculated from the data given in the Table by multiplying or dividing.

It will be observed that the Table is divided into two principal parts, one headed "good effect," and the other "bad effect"; it remains with the Umpire to decide which of these two parts shall be employed in any particular case; in coming to a decision on this point he will be influenced by the size of the object against which the fire is directed, the relative position of the opposing forces, &c.\*

Each portion of the Table is further divided into six vertical columns, each headed by one of the figures on the six sides of a die.

The manner of applying the Table is similar to that already described for the application of Table A; it will, perhaps, be best explained by an example. Suppose a half battery of 9-pr. guns to have been firing shrapnel at a line of Infantry skirmishers for four minutes (2 moves) at 850 yards, the range being known, and the Umpire having decided that the effect of the fire may be considered as "good;" the die is cast, suppose 1 to be thrown; from the Table it appears that 32 men are placed *hors de combat* in one move by a battery of 9-prs. firing shrapnel at the given range; hence 64 men would be placed *hors de combat* in 2 moves. A half battery will therefore place 32 men *hors de combat* in 2 moves; but inasmuch as the Infantry are in extended order, they only incur a loss one-third as great as that given in the Table, that is to say, they lose 11 men.

As the ranges must, in almost all cases, be estimated, and are not in the first instance accurately known, the officer who orders firing to commence must be called upon to give his estimate of the range; should he judge it incorrectly, the fire is supposed to produce no effect during the first move of its duration. In actual war, the Artillery would be able to correct its range by seeing where the shells burst; if, therefore, the officer in command of a battery in action should estimate the range incorrectly, the Umpire should inform him whether he has under or over-estimated it, and allow him to estimate it a second time in the next move

---

\* Although, as has been already mentioned, the number of troops against which the fire is directed does not affect the loss occasioned in a given time, *provided the aim be correct*, it is of course clear that the chance of aiming correctly varies according to the size of the object against which the fire is directed; for instance, a single shell bursting in the midst of a battalion in quarter-column would probably place as many men *hors de combat* as one bursting in the midst of a brigade formed in contiguous quarter-column of battalions; but, inasmuch as the former is of smaller dimensions than the latter object, it is more difficult to hit.

As regards the relative position of the troops engaged, the following, which is extracted from Colonel Sir Garnet Wolseley's "Soldier's Pocket-Book," may be found useful:—

- "5°—Fire of Infantry and Artillery more effective down than "up-hill.
- "10°—Effectual and constant fire of Artillery up-hill ceases.
- "15°—Fire of Infantry in close formations up-hill is without effect.
- "Fire of Artillery up hill totally ceases.
- "20°—Infantry can only fire up hill singly with effect.

and so on until the correct range be found ; until this be done the fire is not to be considered as producing any effect., As regards the fire of Infantry, if the range be judged incorrectly, the Umpire must use his discretion as to whether a correction may be made or not, and also as to whether the fire is to be allowed to produce any effect in subsequent moves, or whether it is to continue ineffective.

If curved fire\* be used, and the range be estimated correctly, it is supposed to take effect, but the party firing is not to be informed that such is the case. After the fire has lasted for a period of two moves, Table A is to be employed to decide whether any movement on the part of the troops exposed to the fire has withdrawn them from its range, or whether they are still exposed to it. The party firing throwing with — I, that is to say, their fire continues effective if they win the throw, but is considered ineffective if they lose it.

In the case of curved fire, if the range be wrongly estimated, the fire is to be considered as producing no effect, but the Umpire must use his discretion as to allowing any correction in the range to be made.

## VI.—RULES FOR THE CONDUCT OF ENGAGEMENTS.

### A. GENERAL RULES.

22. When troops are “repulsed” or are “defeated” or “totally defeated,”\* the blocks of metal which represent them are turned upside down until such a time as they are considered fit to come into action again.

Troops which are merely repulsed are supposed to be capable of resistance after a lapse of 2 moves, and to be capable of again assuming the offensive after a lapse of 4 moves.

Defeated troops are supposed to be capable of offering resistance after a lapse of 4 moves, and to be capable of again assuming the offensive after a lapse of 8 moves.

Troops which are totally defeated are supposed to be capable of offering resistance after a lapse of 8 moves, and to be capable of again assuming the offensive after a lapse of 16 moves.

If troops which have been repulsed are attacked during the first 2 moves in retreat by a force consisting of half their own strength, the chances of success are supposed to be equal, and 0 is the Index Number which must be employed in the application of Table A ; the same Index Number is used if defeated troops are attacked during the first 4 moves in retreat by a force equal to one-eighth of their own strength, or if totally defeated troops are attacked in the first 8 moves

\* By “curved”—or, as it is termed in German, “indirect”—fire, is meant the fire at an object which is concealed from view, *e.g.*, a regiment of Cavalry on the reverse slope of a hill.

+ It will be borne in mind that the words “repulse,” “defeat,” and “total defeat,” have special conventional meanings for the purpose of this game, and that each entails consequences peculiar to itself.

in retreat by a force equal to one-eighth of their own strength. If troops which are merely repulsed reach a hedge or other obstacle which would enable them to rally during the first 2 moves in retreat, they may be allowed to do so and to receive an attack, but in applying Table A to decide on the success or failure of the attack, the attacking troops obtain the advantage of 5 Index Points : if the attack succeeds the defenders are to be considered as totally defeated, even if a face turns up which corresponds with the letter D.

23. *Fresh* troops are such as have not been in action for at least 10 moves.

24. In the application of Table A, troops which are slightly shaken are considered as losing 1 Index Point during 3 successive moves. Troops which are much shaken are considered as losing 2 Index Points during 3 successive moves, and 1 Index Point during 3 subsequent moves.

Whether troops are to be considered as "slightly shaken" or as "much shaken" depends on the amount of fire to which they have been exposed, and will in most cases be decided by the Umpire. Troops which have been repulsed or defeated are to be considered as "much shaken" during the period in which, according to par. 22, they are only capable of offering resistance and not of re-assuming the offensive; during the 3 subsequent moves they are to be considered as "slightly shaken."

Infantry which has been engaged for a moderately long period in a fight about a village, &c., is to be considered as "slightly shaken;" if the combat has been obstinate, as "much shaken."

Cavalry is to be considered as "slightly shaken," if it moves for a considerable distance at a rapid pace, and as "much shaken," if it has attacked several times.

25. If Infantry or Cavalry, which have just gained an advantage are attacked in the first move after their victory by fresh troops, the Infantry forfeit 1 Index Point, and the Cavalry 2 Index Points, in the application of Table A.

26. Troops which are attacked by surprise forfeit 2 Index Points in the application of Table A, if in line or column, and 4 Index Points if in extended order.

27. If an attack be supported by a second line—which, in the case of Infantry, must not be more than 300, in the case of Cavalry from 400 to 800 paces distant, and in either case half as strong as the first—the first line can be "repulsed" only.

## B.—INFANTRY.

1.—*Infantry against Infantry.*

28. Infantry in line when attacked by Infantry in column obtains an advantage of 1 Index Point in the application of Table A. If, however, the decision arrived at is adverse to the force in line, it is to be considered as "totally defeated," even if there be a second line in support.

29. If a body of Infantry contemplates an advance against another body of Infantry posted on flat open ground, then at 400 paces distance the odds are even, at 300 paces they are 3:2 against the assailant, and at 200 paces 2:1 against him. The Index Numbers to be used by the assailant are therefore 0, — I and — II. The assailant must throw at each distance; he may try his luck a second time in the following move if unsuccessful on the first occasion, but if the die again turns up unfavorably he must give up the attempt. If the attack is supported by a flank attack, the assailant gains an Index Point.

The Umpire may vary the Index Number in the event of the ground being of such a character as to favour one or other of the contending forces.

If the attack fails the troops which have been repulsed cannot be employed to attack again for 10 moves. If the attack is renewed with successive bodies of fresh troops, an advantage of 1 Index Point must be credited for each successive attack. In the event of one side being totally defeated, the victor suffers a loss of a third, in other cases of one-half of the loss of the vanquished side.

30. If two stationary forces of Infantry open fire on each other on open ground, and the range is known to both parties, one side or other must be made to retreat after the fire has continued during 1 move if at a distance of from 100 to 200 paces, during 2 moves if at 300 paces, during 3 moves if at 400 paces, during 4 moves if at from 500 to 600 paces. The question as to which side is to retire is decided by Table A in the usual manner, the proper Index Number being chosen with reference to numerical strength, position, &c.

If the range is not known on either side, or if it be only known to one side, or if either or both sides are under cover, the Umpire decides on the moment at which application is to be made to the Table with a view to causing one or other side to retreat.

In such cases the party to whom the decision is adverse is simply "repulsed," and is not to be considered as "defeated" in the sense in which the term is employed in the rules of the game.

## 2. *Infantry against Cavalry.*

31. Infantry are allowed to attack with the bayonet any force of Cavalry which are considered as incapable of assuming the offensive, (*see* par. 22) ; in such cases the Infantry obtain an advantage of 2 Index Points in the application of Table A.

## 3.—*Infantry against Artillery.*

32. If Artillery which is not covered by any natural or artificial protection is attacked in front by Infantry advancing over open, even ground, the following Index Numbers are used in the application of Table A :—

If the attack is made by skirmishers, and no less than 3 companies attack one battery, 0 is the Index Number if at 600 paces ; I, if at 400 paces ; II, if at 200 paces. If a force of not less than half a battalion of Infantry in line, attacks a battery firing at known ranges, 0 is the Index Number if at from 1,000 to 600 paces ; I, if at 300 paces, II if at 200 paces. In all the above cases the Infantry throw with a + sign.

If the attack be made by Infantry in quarter-column, 0 is the Index Number at from 1,000 to 800 paces ; I, at 600 paces ; II, at 400 paces ; III, at 200 paces, the Artillery in each case throwing with a + sign.

In all cases in which a front and flank attack are combined, the Infantry gain an advantage of 1 Index Point in the application of Table A.

If the decision arrived at by reference to Table A is adverse to the Artillery, after skirmishers have approached to within 400 paces, or Infantry in line have approached to within 300 paces, the guns are to be considered as captured. Skirmishers, if their attack fails, are not to be allowed to attack a second time, but they may lie down on the ground without retreating. If the Table gives a decision adverse to Infantry advancing in column against Artillery, the column must retire to a distance of 1,500 paces from the battery, or until it can get under cover ; the column may not advance to the attack of the guns a second time until a period of at least 15 moves has elapsed.

If the numerical strength of the Infantry be very preponderating, or if any other special circumstances tend to modify the scale of chances, the Umpire can make such alterations in the foregoing regulations as he may think fit.

If a force of Infantry captures a battery, but is driven back immediately after the capture has been effected, the battery loses 12 men, and, after a lapse of 4 moves, may manœuvre or come into action, but if the Infantry remains in possession of the guns during the space of one move, the battery may not manœuvre or come into action until 8 moves have elapsed ; for every additional period of one move that the Infantry remains in possession of the guns, an additional 6 moves must be allowed to elapse before the Artillery are to be considered as capable of taking

part in the battle after the recapture has been effected. If the Infantry remains in possession of the guns for a longer period than 4 moves, the latter are to be considered as incapable of taking any further part in the battle, even supposing them to be eventually recaptured. During each of the first 4 moves in which the Infantry are in possession of the guns the loss of the Artillery is to be estimated at 20 men per move.

If Infantry, either lying or standing under cover, open fire at known ranges on Artillery in action, reference must be made to Table A after every 2 moves, to decide, in the first place, whether the guns can maintain their position in spite of losses, which are to be reckoned independently,—and, in the second place, if the Infantry are firing at close range, whether the guns are to be allowed to limber up and retire or not. The Index Numbers to be used in the application of Table A in order to decide whether the guns can maintain their position or not are,—I, if the Infantry is at a distance of from 500 to 600 paces; II, if at 400 paces; III, if at 300 paces. The Index Numbers which are to be used to decide whether the guns are to be allowed to retire, are—I, if the Infantry is at 400 paces; II, if at 300 paces. In all the above cases the Infantry throw with a + sign.

If guns, which are not under cover, allow a force of Infantry to approach unobserved to within 200 paces of them, they are supposed to lose so many horses and men during the move which immediately follows the commencement of firing on the part of the Infantry, that either a portion or the whole of the guns—according to the decision of the Umpire—must be left on the ground, and, after a lapse of 2 moves are to be considered as captured by the Infantry, without any loss having been incurred by the latter.

If guns wish to move up into action under a fire of Infantry when the latter know the range, reference must be made to Table A, in order to decide on the possibility or otherwise of such a manœuvre being executed. The Index Numbers to be used in this case are;—

|                                      |   |   |     |   |
|--------------------------------------|---|---|-----|---|
| O. If the Infantry are at 600 paces. |   |   |     |   |
| I.                                   | " | " | 500 | " |
| III.                                 | " | " | 400 | " |
| V.                                   | " | " | 300 | " |

The Artillery in each case throw with a — sign. If the range is unknown to the Infantry, the guns may move up into action without any reference being made to the Table.

## C. CAVALRY.

### I.—*Cavalry against Infantry.*

33. Infantry in line or column which has not been exposed to fire obtains an advantage of four Index Points in the application of Table A,



if attacked by Cavalry ; if in rallying squares or "slightly shaken," the Infantry obtains an advantage of 2 Index Points ; if "much shaken," the Cavalry obtains an advantage of 2 Index Points. If Infantry, having repulsed an attack of Cavalry are, during the next move, attacked by "fresh" Cavalry (*see par. 23*), the latter obtain an advantage of 1 Index Point.

A line of skirmishers, lying on the ground, are not supposed to incur any loss from an attack of Cavalry unless an actual *mêlée* ensues, in which case the skirmishers obtain an advantage of 1 Index Point.

The loss sustained by Cavalry in attacking Infantry can either be estimated by means of Table B, bearing in mind the proportionate amount of fire to which the former are exposed in any particular case, or a loss of 15 men per squadron may be allowed if the Cavalry be victorious, and of 20 men per squadron if it be defeated, without reference to the Table.

If Cavalry attack Infantry successfully, the loss occasioned to the latter, per battalion, by the *arme blanche*, is shewn by the figures in Table A, in the top row of each partition.

If the attack does not succeed, the Cavalry are to be considered as merely repulsed, but if, in retreat, the force is pursued by hostile Cavalry during the entire space of 1 move, it is to be considered as "defeated;" if it is pursued during the entire course of 3 moves it is to be considered as "totally defeated."

If an attack of Cavalry on Infantry succeeds, the latter is invariably to be considered as "totally defeated", and for every period of 1 move, during which the *mêlée* continues, the Cavalry incur a loss of 5 men per squadron, the Infantry, a loss of one-fourth of their strength.

If Cavalry, whilst engaged hand-to-hand with Infantry, are attacked and repulsed by other Infantry, they are to be considered as "defeated;" if attacked and repulsed by Cavalry, they are to be considered as "totally defeated."

34. Every Cavalry attack (which must be in the proportion of at least 1 squadron against a battalion) which the Infantry do not await stationary is to be considered as successful. In the case of engagements between smaller bodies of Infantry and Cavalry, the Umpire must decide the issue.

If Infantry which is threatened by Cavalry can, in the period allotted to 1 move, reach some adequate cover—which must not be at a greater distance than 400 paces—they may be allowed to run towards it, but if, at the instant of commencing the retreat the Cavalry are within 600 paces, the Infantry are to be considered as "totally defeated" and as having incurred a loss of 20 men for every squadron which attacks.

35. If Cavalry charges Infantry in motion at a distance of not more

H

than 400 paces, the former is always to obtain an advantage of 2 Index Points in the application of Table A.

Bridges or ditches which are held by skirmishers are to be considered as insurmountable obstacles for Cavalry if the ground in front of them is open for 500 paces or more ; if not open for so great a distance, the Index Number III is to be used in the application of Table A to decide the matter ; the Cavalry throw with a — sign. If a body of troops, in line or column, is posted in rear of a bridge, the Umpire must decide whether it would be possible for the Cavalry to force the passage or not.

36. Application must be made to Table A to decide whether Cavalry may be allowed to remain in position in the presence of skirmishers. The Index Numbers to be used, if the skirmishers know the range, are II if at 600, III if at 500, and IV if at 400 paces ; the Cavalry throw with a — sign. It is considered impossible for Cavalry to remain in position in the presence of skirmishers at any distance less than 400 paces.

Cavalry may always be allowed to ride by Infantry if posted at a distance exceeding 600 paces ; if Cavalry wishes to ride by Infantry posted nearer than 600 paces, Table A must be used to decide on the possibility or otherwise of the manœuvre being executed ; the Index Numbers to be used, if the Infantry know the range, are :—at 600 paces—0, if the Cavalry rides by at a gallop, I if at a trot ; at 500 paces—I if at a gallop, II if at a trot ; at 400 paces—II if at a gallop, III if at a trot. In all these cases the Cavalry throw with a — sign. Cavalry are never to be allowed to ride by Infantry posted at a less distance than 400 paces except in pursuit, and then only by the special permission of the Umpire. Cavalry are never to be allowed to ride by Infantry at a walk when the latter are posted at a less distance than 600 paces. In all cases in which the possibility of Cavalry riding by Infantry is decided in the affirmative, the losses which will be incurred in doing so are to be reckoned independently.

## 2.—Cavalry against Cavalry.

37. If the officer commanding a force of Cavalry resolves to attack another force of the same arm, he must notify his intention to the Umpire, who then communicates it to the other side, and requests the officer commanding the force about to be attacked to inform him of his intentions, that is to say, whether he will retire or advance to a counter-attack, &c. If the attack does not take place, the party which declines the engagement must be made to retreat. If the party threatened with attack resolves to accept battle, it is incumbent on each side that they should move for at least 300 paces in the direction in which each respectively informed the Umpire that it was his intention to move, and until this is done it is not in the power of the commander on either side to retreat or otherwise to alter his original order.

38. If a force of Cavalry, in attacking, has to leap any ditches when within 400 paces of the enemy, it forfeits 1 Index Point in the

application of Table A. Cavalry charging down a slope of  $10^{\circ}$  forfeits 1 Index Point. To charge up or down a slope of  $15^{\circ}$  or more is considered impossible.

One squadron attacking in flank is to be considered as producing as much effect as two squadrons attacking in front. If a force of Cavalry when in the act of making a flank movement is attacked by Cavalry, it is invariably to be considered as defeated.

39. The result of an engagement between two forces of Cavalry it decided by means of Table A, the Index Number being chosen with due regard to the relative numerical strength of the opposing forces, their condition, the nature of the ground which each has to pass over, &c. If the Index Number should chance to be 0 or II, it is, in the first instance, necessary to cast the die in order to determine whether the decision takes place during the same move as that in which the charge is executed, or in the move immediately following it. With other Index Numbers if a blank turns up the decision is delayed to a subsequent move.

Cavalry which is "totally defeated" must retire at a gallop, and, for the first two moves after its defeat, straight to the rear; it is not to be allowed to halt until it either reaches its supports or until it has quitted the immediate battle field. Cavalry which is "defeated," or merely "repulsed," must also retire at a gallop, and during a period of 1 move immediately following its repulse, must move straight to the rear. After retiring for a period of 1 move in this direction, the officer commanding may adopt his own pace, and may change direction in whatever manner he thinks fit. If Cavalry which has been "totally defeated" is pursued by other Cavalry, it is to be considered as totally routed and dispersed. If Cavalry which has been "defeated" is pursued by other Cavalry, it is to be considered as "totally defeated" after the pursuit has lasted during a period of 2 moves. If Cavalry which has been merely "repulsed" is pursued by other Cavalry, it is to be considered as "defeated" after the pursuit has lasted during a period of 2 moves. During the first four moves in pursuit, the force which is pursued is always to be supposed to gain 100 paces on its pursuers.

If beaten Cavalry encounter any considerable obstacle (amongst which is included a rise in the ground of  $20^{\circ}$  and upwards) during its first move in retreat, it loses half its strength, and after a lapse of 3 moves, is to be removed from the map and entirely disappear from the game. If it encounters any such obstacle during its second move in retreat, the losses which is experienced in the attack are to be doubled.

The loss per squadron in each move, which is incurred in any *mêlée* prior to the result of the engagement being decided, is given in the lower of the three lines in each partition of Table A.

The party which is victorious incurs a loss half as great as that of the beaten party, in those cases in which the latter is "defeated" or repulsed"; if the beaten party be "totally defeated" the victors only incur a loss one-third as great as that of the beaten party.

For each move during which the pursuit continues, the beaten party lose as many men as they originally lost in each move during which the *mêlée* lasted; the pursuers in each move lose one-sixth as many men as the pursued. If a second line is in support, beaten Cavalry are never to be considered as more than "repulsed"; they may be allowed to rally behind their second line.

Squadrons acting singly may be allowed to retreat over bridges, &c., but in doing so, they incur a loss double as great as that which they experienced originally in the attack.

As regards the attack of victorious Cavalry by fresh troops—*see* par. 25.

### 3.—*Cavalry against Artillery.*

40. Cavalry, which makes a front attack on Artillery in action, forfeits 4 Index points in the application of Table A.

Guns in action in the open, if attacked by Cavalry in flank, are always to be considered as captured if the Cavalry approaches unobserved to within charging distance. If the guns are under any natural or artificial cover, and are attacked in flank by Cavalry, they are to be considered as captured if their position is attacked by other troops in front simultaneously with the Cavalry attack in flank.

Artillery in motion, when overtaken by Cavalry, is always to be considered as captured.

If a force of Cavalry wishes to ride by guns in action at a distance of from 400 to 700 paces, application must be made to Table A to decide on the possibility or otherwise of the execution of the *manœuvre* the Index Number II being employed; the Cavalry throw with a — sign. Cavalry are not to be allowed to pass within 400 paces of guns in action except when in pursuit, and then only by special permission of the Umpire. In all cases in which Cavalry ride by Artillery in action within range of the guns, the losses incurred by the former are to be calculated.

41. As regards the re-capture of guns after they have been captured by Cavalry, etc., the rules laid down in par. 32 for the conduct of Infantry in such cases apply also to Cavalry.

### 4.—*Cavalry fighting on Foot.*

42. In exceptional cases Light Cavalry may be employed to act on foot for the occupation of defiles, etc. The Umpire must decide arbitra-

rily whether in any particular case, such a course of action is to be permitted or not.

#### D.—ARTILLERY.

43. It is supposed that all those who take part in the game are acquainted with the circumstances which render it desirable to employ common shell, shrapnel, or case,—with the conditions which render any particular kind of fire productive of greater or less results, and with the other general principles involved in the application of Artillery.\* The proportionate losses caused by the fire of guns at different ranges are given in Table B, (*see par. 12*).

44. If a force of Artillery wishes to come up into action in the presence of other guns in action within a range of 1,500 yards, application must be made to Table A to decide on the possibility or otherwise of the execution of the manœuvre. If the enemy's Artillery know the range, the following Index Numbers are to be employed by the Artillery desirous of moving up—

\* It would be quite impossible within the limits of an ordinary note to enter at length into the subject of the most suitable method of employing artillery in the field, more especially since the tactics of Field Artillery have recently undergone, and are still undergoing, great and important changes. The following extracts from Colonel Owen's *Modern Artillery* may, however, give some of the general principles which are generally received on the subject :—

“The objects of Artillery in the field are—

“(1.) To *prepare* the way for the action of other arms by creating disorder and confusion in the enemy's ranks, dismounting his guns, destroying slight obstacles, or rendering cover untenable.

“(2.) To *support* troops of other arms in their movements, by preceding an attack, forming a rallying point in case of repulse, checking advancing columns of the enemy, harassing a threatening foe, covering a retreat, or defending the key of an important position.

“(3.) To *decide* an action by the concentration of a number of batteries on an important point.”

“In choosing a position upon the field for Artillery, the following principles should be borne in mind, viz., that the guns should command not only the approaches to the weakest points of the position, but also, if practicable, the whole of the ground within range; that they should not inconvenience the manœuvres of the troops they support; and that they should be as far removed as circumstances will permit out of range of any place which might afford a shelter for the enemy's Infantry, and from whence the latter could harass the gunners. If this, however, be impracticable, one or more guns must be told off to keep down the enemy's fire.

“The fire of guns should always be *concentrated* or *converging* when practicable.

“In taking up a position with Field Artillery it is very necessary to consider the formation of the ground and nature of the soil, not only of the part of the field the battery is to occupy, but also of that surrounding it. For precision in firing, the ground on which the guns are posted should be tolerably level, and should not have too great a command over the space which the enemy must cross over to the attack, as a plunging fire is little destructive. A gently falling slope of not more than 1 in 15 is to be preferred; the fire of artillery produces the most effective results on a slope of about 1 in 100. Batteries should not be placed on stony ground, as the enemy's shot makes the stones fly in all directions, often causing considerable damage: marshy ground in front of a battery is good, should the latter not be likely to advance, as the shot will either penetrate or ricochet but little from it.”

|                            |     |
|----------------------------|-----|
| From 1,200 to 1,500 yards, | 0   |
| " 1,000 " 1,200 "          | I   |
| " 800 " 1,000 "            | II  |
| " 600 " 800 "              | III |
| " 400 " 600 "              | IV  |
| " 300 " 400 "              | V   |

If the enemy's Artillery are not acquainted with the range, the other side may move its guns up into action in the presence of hostile fire without any reference being made to the Table. If the ranges are known to the one side, and the decision arrived at by reference to Table A is in favour of the possibility of the other side bringing its guns into action in spite of the fire of its adversary, the loss which it will incur in doing so must be calculated independently.

Guns are never to be allowed to move up in action in the presence of hostile Artillery in action at less range than 300 yards.

45. In every action of Artillery against Artillery at ranges of 1,500 yards and under, reference must be made, after a certain interval, to Table A to decide on which force of Artillery is to fall back; the Index Number which is to be employed in deciding the question must, as usual, be determined with reference to relative numerical strength, position, &c. The interval after which reference must be made to the Table varies according to the range; if the range is known, reference must be made to the Table—if at 400 yards, after 2 moves; if at 600 yards, after 3 moves; if at 1,200 yards, after 4 moves. The mutual losses occasioned by the fire of the guns on either side must also be reckoned.

46. Artillery which, according to pars. 44 and 45, has been beaten, must retreat, and may not be brought into action again for an interval varying from 5 to 15 moves, according to the loss sustained.

If, however, the commander of the force to which, by the application of the rules laid down in par. 45, the decision of Table A has been adverse, is still unwilling to retreat, notwithstanding his partial defeat the guns may be allowed to continue in action for a further period of from 2 to 4 moves, the exact period being decided by the Umpire. Reference must then be again made to the Table, in the application of which the Artillery which preferred to continue in action rather than retreat, forfeits 2 Index Points, and, should the decision be again adverse, must be forced to retreat, and cannot be again brought into action for a period varying from 10 to 30 moves according to the loss which has been sustained.

Enfilade fire is always to be considered as twice as effective as direct fire.

# Appendix. III.

## Table A.

*For deciding on "Possibility" of Attack, on "Success" of Attacks.  
and on losses inflicted in the attack by the Arme Blanche (bayonet or sabre)*

*N.B. R. Repulses; D. Defeats; T. Total Defeats.*

| Number<br>or<br>Index<br>Points | Odds<br>for<br>or<br>Against | Faces of the Die |    |     |      |       |        | Odds<br>for<br>or<br>Against | Number<br>of<br>Index<br>Points |                    |
|---------------------------------|------------------------------|------------------|----|-----|------|-------|--------|------------------------------|---------------------------------|--------------------|
|                                 |                              | •                | •• | ••• | •••• | ••••• | •••••• |                              |                                 |                    |
| -V                              | 5:1                          | 12               | 15 | 18  | 22   | 30    | 35     | 5:1                          | +V                              | Loss per Battalion |
|                                 | Against                      | R                | D  | D   | D    | T     | T      | On                           |                                 | Loss per Squadron  |
|                                 |                              | 2                | 3  | 4   | 6    | 8     | 10     |                              |                                 |                    |
| -IV                             | 4:1                          | 12               | 12 | 18  |      | 22    | 30     | 4:1                          | +IV                             | Loss per Battalion |
|                                 | Against                      | R                | R  | D   |      | D     | T      | On                           |                                 | Loss per Squadron  |
|                                 |                              | 2                | 2  | 4   |      | 6     | 8      |                              |                                 |                    |
| -III                            | 3:1                          | 12               | 12 |     | 18   |       | 30     | 3:1                          | +III                            | Loss per Battalion |
|                                 |                              |                  |    |     |      |       |        |                              |                                 |                    |
|                                 |                              |                  |    |     |      |       |        |                              |                                 |                    |





# APPENDIX IV.

TABLE B.

|      |                  |                    | GOOD EFFECT. |    |    |     |     |     | BAD EFFECT. |    |    |     |     |     |
|------|------------------|--------------------|--------------|----|----|-----|-----|-----|-------------|----|----|-----|-----|-----|
| Gun. | Pro-<br>jectile. | Range in<br>Yards. | o            | o  | o  | o o | o o | o o | o           | o  | o  | o o | o o | o o |
| der. | Case.            | up to 300          | 16           | 20 | 24 | 26  | 28  | 30  | 9           | 10 | 12 | 14  | 16  | 18  |
|      |                  | 300-600            | 10           | 11 | 12 | 14  | 16  | 18  | 4           | 5  | 6  | 7   | 8   | 9   |
|      | Shrapnel.        | 600-800            | 40           | 48 | 56 | 64  | 72  | 80  | 25          | 30 | 35 | 40  | 45  | 50  |
|      |                  | 800-1200           | 30           | 36 | 42 | 48  | 54  | 60  | 16          | 20 | 24 | 28  | 32  | 36  |
|      |                  | 1200-1600          | 20           | 24 | 28 | 32  | 36  | 40  | 8           | 10 | 12 | 16  | 20  | 24  |
|      |                  | 1600-2000          | 10           | 12 | 14 | 16  | 18  | 20  | 0           | 2  | 4  | 6   | 9   | 12  |
|      |                  |                    |              |    |    |     |     |     |             |    |    |     |     |     |



## CRYPTOGRAPHY.

THE subject of cipher writing as applied to Army Signalling having been introduced in the pages of the May number of the Proceedings of the United Service Institution, I take the opportunity of offering a few remarks on Captain Hennell's paper, as it bears evidence of the author being unaware of the fatal weakness inherent in his proposed system. As cryptography is not a study to which officers usually give much, if any, of their time, the erroneous principle in the above system will not be apparent to the general reader, and as I do not think it should pass unnoticed, I purpose drawing attention to it in this paper, and trust that my remarks may not be considered hostile criticism, but be received as the friendly exposure of a fallacy.

Captain Hennell's paper may be divided into two parts, one referring to a change in the instrument, and the other to propositions regarding the *system* of sending messages. On the mechanical changes proposed in the regulation cipher-wheel I will not touch, but shall confine myself to the *principle* now advocated for sending messages. The author's views in the paper summarised may be stated as follows :—

I. For all ordinary purposes of signalling in the field, the present official system of cipher is unnecessarily obscure, and is in addition tedious to work.

II. That as in signalling “rapidity and simplicity are the great points,” an easy cipher would answer every purpose as well as a difficult one.

III. That therefore a key *letter* is proposed as a substitute for a key *word*.

IV. That in the “generality of cases” an enemy would be “in a position” which in itself makes the process of reading signals a difficult one, and that therefore a very simple cipher would increase this primary difficulty so much that the signal could be acted upon by those for whom it is intended long before the enemy could decipher the message.

Such, as I understand them, are the author's reasons for proposing a simpler cipher than the one now extant. With reference to the objection No. IV it will only be necessary to point out that it would be as unwise as it would be dangerous to rely on the contingency of the enemy occupying an unfavorable position as a reason for adopting a cipher so simple, which under different circumstances it would not be prudent to use. As really we should come then to having one simple system for occasions when in the opinion of the signaller the enemy is in a “bad position” for reading the signals, and another more complicated system for times when there is a probability of the enemy occupying a situation which enables him to read off with comparative ease the message as it is being signalled.

It appears to me rather that if the enemy's position precludes him

from distinguishing signals, it matters little whether a message is sent in the ordinary way or by cipher, for one would be almost as unintelligible as the other. But this contingency of the enemy's position is one that should *never* be taken into consideration in connexion with the *principle* of cipher writing, that might *in itself* be right or wrong. Cipher can only be adopted for one of two reasons, either because the author of the message desires to keep its import a secret from the signalers through whose hands it has to pass, or because he wishes to preserve it from interpretation by an enemy. If a system of cipher writing does not answer the condition of great secrecy it is practically *useless*. Simplicity of principle and rapidity in working it are undoubtedly great recommendations in a system of cryptography, but if the first essential of secrecy is absent, then it must be admitted that the method is wanting in the chief requisite.

In passing it may be remarked that "an absolutely secret cypher" (I quote from the official code-book) "has not yet been devised and that the key of *every* kind of cipher may be discovered if *sufficient* time and labor can be given to it." So that the difference between one system of cipher and another resolves itself into a question of relative secrecy only. Of the several systems that I am acquainted with, undoubtedly the *principle* of that given in the Code-book is the most sound, while on the other hand the system proposed by Captain Hennell is one of the most unsound, and the *principle* of which every tyro in the art of secret writing is warned against.

It is self-evident that the adoption of cipher under certain circumstances implies that on such occasions safety is not to be found in ordinary writing. If there is no danger of one's message being misused, then certainly by far the most sensible and satisfactory plan is to transmit it by the ordinary code signals or by the alphabet. But if the object is to preserve secrecy, then cipher must be adopted, and this cipher should be of such difficulty as to gain the desired end, an inefficient cipher is more than useless, as it only complicates transmission without introducing reasonable safety into the message, this statement is such a perfect truism, that I should not have adverted to it, had not the author of the paper under notice laid stress upon the assertion that in "Army Signalling" "a difficult cipher is a great mistake" because "rapidity and simplicity are the great points required."

To proceed to the examination of Captain Hennell's proposals. He clamps the asterisk (\*) in the inner disc under the initial letter (whatever it may be) of the message on the outer disc, and keeping the two discs in this relative position without *alteration*, he signals the *whole* message, reading off the cipher letters from the inner disc from under the corresponding letters of the *true* message found on the outer disc. The end of each word is marked by the letter found in the inner disc under the hyphen (—) in the outer disc, and the end of the message is defined by the hyphen and the asterisk.

Now it is not too much to assume that if an enemy is sufficiently intelligent to read our signals, that he is equally capable of making the attempt to resolve cipher into its simple signification. It would also be reasonably prudent to assume that he is supplied with the instruments we use, and that he is acquainted with all system of cipher. To hazard an important message on the supposed ignorance of the enemy on these points would perhaps lead to unlooked-for inconvenience, even if it did not involve positive disaster.

Let us see then (assuming one is acquainted with Captain Hennell's instrument and system) what slight difficulties there are in deciphering a message written under this plan. As an example we will take the sentence illustrating the author's paper; *viz.* "The enemy moving in force on the right." Transcribed into cipher it will stand thus;

t h e — e m e m y — m o v i n g — i n —  
T L O U O F O G W U G E Z K F M U K F U

f o r c e — o n — t h e — r i g h t — \*  
• N E B Q O U E F U T L O U B K M L T U T

If one received this message in its entirety, all that would have to be done would be of course to set our instrument to T (knowing that the initial letter is the key) and read off the message with as much ease as if it had been signalled direct to us. This is the chief drawback to each message carrying its own key *with it*. Suppose, however, that we had missed taking down the first two or three letters, we should have then carefully to note the *last* letter of the message. Knowing that this is the equivalent of the sign (\*) denoting the end of the message, we should simply set the asterisk in the inner disc under the letter observed (in this instance T) in the outer circle and read off the message as before. Supposing, again, that by an accident we were deprived from noting both the initial and final letters of the message. We should then fall back upon the third weak point in this system for aid. Having taking down the message we should look over it carefully, and should find that some one letter appeared constantly at irregular intervals. The probability is that such letter is the equivalent for the *hyphen* dividing words from one another. We should set the hyphen to this letter and see if the message became intelligible. If it did not we should try another letter and so on. These experiments would not occupy more than a few minutes under the most adverse circumstances. In the illustration we have used, the letter U reveals itself at once as the division we are in search of. Placing the asterisk in the inner disc under the U in the outer one, the key to the whole message is in this way obtained without further trouble.

We have yet another means which we can impress into our service. As Captain Hennell represents a true letter always by the *same* cipher equivalent throughout a message, we can bring, what is generally known

as the compositor's alphabet to our aid. This is the alphabet arranged according to the frequency of the occurrence of the several letters in the English language. In tabulated form the letters stand thus—

|               |          |
|---------------|----------|
| 1. e          | 11. f    |
| 2. t          | 12. w, y |
| 3. a          | 13. g, p |
| 4. i, n, o, s | 14. b    |
| 5. h          | 15. v    |
| 6. r          | 16. k    |
| 7. d          | 17. q    |
| 8. l          | 18. j x  |
| 9 u           | 19. z    |
| 10. c, m      |          |

From this it will be observed that the letter *e* occurs most frequently than *t* and so on. So that if we have a cipher in which a true letter is *always* represented by the *same* cipher equivalent, we may safely assume that the predominating letter is *e*, and that the next is *t*. To unravel a cipher by this process is rather tedious, but still it is one of the crutches that one has to fall back upon. When however a true letter is represented each time or very nearly each time, by a *different* character in cipher, this method of analysis with the compositor's alphabet, is of no service to us.

From this it will be apparent that a message written with *one* key letter, carries in itself several traitors which must betray themselves when subjected to the most simple examination. The fatal objection to a key letter is that a *regular* and *fixed* order of cipher is preserved throughout the whole message, and whenever this arrangement exists, there *must* be weakness. In fact, it may be laid down as an axiom in cipher writing that when an *alphabetical, or unbroken regular succession in the order of transcribing a message into cipher is observed, then there is but little difficulty in solving such cipher*. Safety lies only (with such an instrument as Captain Hennell's) in breaking the order of the cipher for each letter, that is, in altering the *relative* position of the two discs for each letter, so that no two letters are rendered into cipher in consecutive succession while the discs are in one position.

By way of illustrating this statement, I will take the most difficult case it is possible to meet with under Captain Hennell's system of rendering a message, by an *unbroken succession* of equivalents, into cipher, and when also we have written an initial nor final symbol given to help us. Let us take the same sentence as before, "the enemy moving in force on the right," and render it into cipher with the key word **ENGLAND**, using this cryptograph for the purpose. The sentence will then stand as follows :—

|                      |             |               |       |
|----------------------|-------------|---------------|-------|
| Key.....E            | N           | G             | L     |
| Message.....T H E —  | E N E M Y — | M O V I N G — | I N — |
| Cryptogram...m y * f | i * i a q o | v t m z u * h | c z m |

|                          |       |         |           |
|--------------------------|-------|---------|-----------|
| Key.....A                | N     | D       | E         |
| Message.....F O R C E —  | O N — | T H E — | R I G H T |
| Cryptogram...w n k z x b | — * o | l x — e | o x z y m |

This is the most safe form in which a message can be written *when* the principle of a regular succession is adopted, for the consecutive order is broken at the end of *each word* so that we obtain only severed *groups* of the irregular cipher instead of one uninterrupted and regular succession of letters from first to last. Changing the relative position of the discs for each word introduces an element of difficulty (to a certain extent) which does not exist when a *complete* message is written without altering the relative position of the discs, in other words, when a key-letter is used.

To proceed to the solution of our cipher. In the above figure line 1 is the word, line 2 the true message, and line 3 the cryptogram from which I get the "returner" thus. I fix the two discs in any one position, the relative places of the two does not *matter in the least*. In this instance, I fix the A of the inner disc under the A of the outer disc (*see* Plate I). I then *reverse* the process observed in writing the message, and find the equivalents on the *outer* disc of the letters in the *cryptogram*. Thus above *m* in the inner disc I find *q* in the outer disc, above *y*, I find *e* and so on. The two discs are not altered during the whole process of getting the "returner" line. I next copy the *outer* disc *twice* over in a perpendicular line and call this slip of paper the "pointer." Now we work backwards. The last letter in the "returner" line is *q*, so place the first "q" in the "pointer" just on the left of the "q" in the "returner" and copy down all the letters of the "pointer" in regular succession for one complete alphabet. As we commenced with "q" we end with "p." Now just move the "pointer" a little to the left so as to expose the next letter in the "returner" which in this case happens to be "e". Place the "e" of the "pointer" by the side of the "e" in the "returner," and copy down a second perpendicular line of letters, making as before one complete alphabet in each instance. Proceed in this manner from right to left until you observe that you get a complete word. In this instance we get the word "right" after writing down five rows of letters. Having obtained the best word in the message, the rest of the process is simplified. Being acquainted with the system under which this message has been written (I assume this of course all through) I know that the next letter on the *left* in the message must be the representative of the hyphen (—) dividing the word from another. This being "y" in this case I place the "y" in the pointer on its left and observe where the hyphen in the pointer falls. I mark this place on the paper with a hyphen and *on*

*this line, the whole of the remainder* of the word will be found. If paper ruled in small squares is used, it will be found to assist one materially, as we shall then get all the letters exactly the same distance from one another, and so avoid the risk of confusing the lines. I next place the "c" in the pointer to the "c" in the "returner", and find that the letter in the "pointer" opposite the line on which I marked the hyphen is "e". Writing it down and proceeding backwards as before, we find in this same line the letters "h", and "t," giving us the word "the." The whole message reveals itself in this way. It will be seen that the words come out at different distances from the "returner" line. Using the hyphen in the original message, written under this system, is of great assistance to the analyst as it points out to him at once the different positions in which the true words will be found. If the hyphens were omitted then we should have to proceed as we did to find the first word and copy down successive alphabets in various orders. This would merely increase the labor a little but would in no way introduce any more safety.

There is no safety whatever in any message written under Captain Hennell's system, for whenever a *regular order* is observed even for *one word* at a time in writing a cryptogram, such cipher must yield its secret to the analysis I have just pointed out, for it works with mathematical accuracy. Of course this is the method that one would use in the first instance to unravel a message if one knew beforehand that it was written in a consecutive order of cipher, but I have drawn attention to a few of the other means that are ready at hand for deciphering secret writing.

Cipher writing is of very old origin. Cæsar had recourse to it, and the systems used by Charlemagne and Alfred can still be found I believe. Bishop Wilkins in 1604 wrote on this subject in his "Mercury, or the secret and swift Messenger." Bacon gave his attention to it, and invented a very safe cipher, but it is tedious to use. But all the results of many centuries of efforts in the art of cryptography, may be divided into two distinct sections. The first, consisting of the same cipher equivalent merely for a letter, so that a "true" letter is always represented by the same character, and the second consisting of a different symbol, each time for a true letter. Of course it is evident that the second class is by far the most useful as it is just as easily worked as the first class, and is considerably more difficult to discover.

The principle of the system given in the "Army and Naval Signal Book" is the same as that introduced by the late Admiral Beaufort many years ago, a message written under this system is very nearly, though not quite safe from detection. The chief advantage of it is that a message written on this principle is unintelligible to all except those in possession of the key. An enemy might possess the instrument, and be thoroughly familiar with the official system, and yet if he was unacquainted



with the particular *key* by which the message was written, it would be a sealed language to him.

Secrecy in cipher writing can *only* be obtained where there is a constant *variation* of cipher equivalents for the same true letter, and any system in which this principle is neglected must be a weak one.

ELPHINSTONE BEGBIE, CAPTAIN,

*Madras Sappers and Miners.*





## SELECTION No. 2.

## THE GERMAN OFFICIAL ACCOUNT OF THE FRANCO-GERMAN WAR.\*

THE official account of a great war, written within a few months of the events which it describes, must always be of more than ordinary value and interest, whether it come from victors or vanquished. But the successful army has advantages not possessed by the defeated. Its head quarter Staff has more leisure at the time, more opportunities for receiving and digesting reports which are themselves more likely to be accurate. It captures many documents from the enemy, and loses few or none ; and, above all, it has less reason for hiding misadventures. Among all the histories of the war none is likely to be so trustworthy as that issued by the Prussian Staff, and all the more because it has had the advantage of studying the many explanations put forth on the French side since the campaign. Captain Clarke's straightforward translation of Von Moltke's history will be hailed as a real boon by English students. The volume now issued contains only the account of the quarrel, the mobilization and plans on both sides, and the execution of these plans up to the end of July 1871, together with a detailed description of the forces assembled to do battle for military supremacy in Europe. Yet it tells enough to prove how hopeless was the French cause from the commencement, to prove also how unsatisfied are the German chiefs with anything short of perfection in their readiness for war, and how earnest they are in correcting any faults made apparent in previous campaigns. In speaking of the book we shall treat it as if written by Von Moltke himself, as it certainly has been, at least under his superintendence.

Sad as is the thought of great and civilized nations imbued with mutual jealousy and hatred, grievous as is the shock to the minds of philosophers and moralists, it must be confessed that no power—neither Christianity, nor philanthropy, nor even commerce—has yet been able to bridle the passions of men and prevent them flying at each other's throats. Individuals may be tamed to submit to an impartial law but it seems that now, as much as ever nations may fall under a kind of madness, which, call it by what name we will, is in reality an enthusiasm for slaughter.

Whatever might be the occasion found for the collision, war between France and Germany was inevitable. The wars of the Republic and the First Empire shook, indeed, the strength of France for a time, but left her in possession of territory which, Von Moltke says, had been " torn

---

\**The Franco-German War, 1870-71.* Translated from the German Official Account at the Topographical and Statistical Department of the War Office by Captain F. C. H. Clarke. R. A. Authorized translation.

from the Empire of Germany in the time of its impotence." The riches of her soil and the genius of her people enabled France to recover rapidly the vigour she had lost. Wealth increased, reaching an unexampled point in the reign of Napoleon III., who clung to the throne only by identifying himself with the material prosperity of the country, and by flattering that love of military glory so characteristic of the people. When the divisions of Germany ceased by the expulsion of Austria from the Confederation, when Prussia placed herself at the head of Northern Germany, and the inheritor of the name of Frederic the Great assumed the command of all the armies throughout the length and breadth of the German territories, France awoke to the contemplation of a mighty Power beside her, where all had previously been division and weakness, of unity in aim where dissension had formerly prevailed, and of the best military system in the world, worked by Soldiers of high talent, where before had stood a number of petty armies only useful to neutralize each other. At the head of this military machine was one man, surrounded by such an array of talent, military and political, as has hardly been collected before. Moreover, it was fully understood that the aggrandizement of Prussia would never cease till Germany should become one Empire under the House of Hohenzollern. No longer should France retain her undisputed military supremacy, no longer dictate the declarations of war or the terms of peace among other nations, no longer overawe the councils of Europe, unless she should first make good her title to the position she claimed at the point of the sword. She had been impotent in 1866, and had since then been chewing the leek presented by Bismarck. On the other hand, the Germans, standing at the threshold of complete unity, were forbidden by France to enter, and sometimes, as in the Luxembourg affair, even compelled to withdraw an outstretched foot or hand. The French then were felt to be their enemies as much as they had been when the whole land was overrun by them : and if the Germans at this time loved peace, they felt it could only be won through " blood and iron." Both countries were confessedly preparing for a struggle. The only questions were—When would it come, and how be brought about ? The Emperor Napoleon III. was notoriously a lover of peace and plenty ; but he had built his Throne upon the support of his soldiers, and he felt that it was tottering, when, in spite of all flattery and management, a considerable proportion of those soldiers signified their change of feeling towards him in the *plebiscite* taken by his own command. From that moment there was no hope for him but in the chance of a military success. If he engaged in war with a minor power it was certain that the opportunity would be seized by Prussia to complete the unity of Germany. No successes could atone for that, if once it were accomplished. Nothing, therefore, remained but to try this greatest of questions with the sword.

The Prussian Court was believed throughout Germany to be averse to a speedy settlement of the difficulty, for Prussia might be swallowed up in a united Empire, and it is remarkable that during this period of anxious attention the Government of North Germany courted observation of its military strength. If Baron Stoffel wrote truthful accounts of the

condition of affairs, military and political, his information was by no means difficult of attainment. Foreign officers were invited to study at great manœuvres the readiness of the army for war, and the power of Germany was rather paraded than concealed. As the moderation of the Government was displayed in the withdrawal from Luxembourg, so would it probably have been again manifested in the Spanish question if it had been possible. Up to a certain point, moderation was shown. Though the King of Prussia replied to French complaints by protesting that the question was a Spanish one and no affair of his, we cannot suppose that the withdrawal of the Prince of Hohenzollern from nomination to the Spanish Crown was contrary to the will of his august relative, and the English Ambassador at Paris expressed his regret that the withdrawal of the Prince was not taken as a settlement of the difficulty. But a triumph of some kind, political or military, was necessary for the safety of Napoleon's dynasty, and Count Benedetti was charged with a message to the King of Prussia, demanding that he should pledge himself never to give his consent should the question of the succession to the Spanish Throne ever be revived. The telegram from the French Cabinet to Benedetti contained, according to the account before us these words. "It is necessary that the King . . . should assure us that he will not again authorise this candidature." The message was delivered by Benedetti to the King on the 13th of July, and definitely declined. Count Benedetti left for Paris on the 14th, and the order for calling out the French Reserves dates from 3 o'clock in the afternoon of that day, though it was postponed until early next morning to give time for a council presided over by the Emperor and lasting six hours. It was said that the order was finally decided upon by reason of reports which arrived during the night of the 13th of Prussian preparations. Von Moltke says that at the time "not a soul dreamt of war being so imminent." When the French Ministerial proposals were laid before the Assembly, the only dissentients of note based their opposition on the ground that France was not ready. The despatches on which the determination for war had been arrived at were laid before a Commission selected by the Chamber on the demand of M. Thiers, supported by M. Jules Favre. On the report of the Commission, the Senate unanimously, and the Legislative Body by a large majority, ratified the proposals of the Government, granting a large money subsidy on the 18th and 19th. It is true that when the Departments were called on for their opinions, 34 were against war, 37 divided in opinion, and only 16 distinctly in favour of war. But the country followed the lead of the capital, and there can be no doubt that the nation approved, or at least condoned, the war before it actually broke out. Whatever may be thought of the wisdom of breaking the peace at all, it was surely little short of madness to declare war on the 19th, when "the preparations in France had scarcely commenced, and no army was collected." Let us now examine briefly the preparations on both sides, not only after the note of war had sounded, but what is of still more importance, the preparations made in peace for the war which was still to come.

The successes of Prussia in 1866 set all the nations examining their

condition for war, and General Trochu's book called attention to many obvious faults of the French system in so loud and clear a voice that the Emperor intrusted his War Minister, Marshal Niel, with the preparation of a new Military Code. By the new code the military forces of France were divided into Active Army, Reserve, and Mobile National Guard.

Conscription was the basis of the recruiting system. The conscript served for five years with the colours and four years in the Reserve—that is if he served at all: for, substitution being allowed, the best men found it worth their while to pay a certain sum of money, in consideration of which some soldier or other, generally a man useless for all else would consent to remain in the ranks and set the richer conscript free. To such an extent was this system carried that, in 1869, out of a total contingent numbering 75,000 men about 42,000 availed themselves of the opportunity afforded them for shirking military service. Only part of each year's contingent was actually sent to do soldiers' work steadily and persistently. The rest of the conscripts only served five months in all, spread over three years though they were always at the disposal of the War Minister. The Reserve could only be called in by Imperial decree, when there was danger of war, and there were further difficulties, of which we shall speak presently. The object of the Reserve was to reinforce the field army, to garrison fortresses, and form *dépôt* troops.

The Mobile National Guard was composed of men supposed to be fit for service who had escaped conscription for one reason or another. These men had only 15 days' drill in a year and only one day at a time. If we subtract from the day the time taken in going to and from the drill ground, often a distance of several miles, and time occupied in clothing and equipping themselves for drill it will appear evident that but a very few hours annually were spent in learning soldiering; moreover, the re-organization scheme would not be completely carried out before 1875, and Marshal Neil's successor, Le Bœuf, considered that such a National Guard was of no practical value, and allowed its organization to remain uncompleted, if not to fall through altogether. About the middle of July, 1870, the strength of the French Army, including the so-called 1869 Contingent, which would not, however, be enrolled till the 1st of August 1870, numbered about 567,000 men, but in that total were included non-effectives of various sorts, 50,000; Gendarmes, 24,000; *Dépôts* 28,000; Home Garrisons, 78,500; Algeria, 50,000—total 230,500. Deducting these from the 567,000 there remains an army for the field of about 336,000—rather less than the Prussian General Staff had calculated to meet. But not even this number was really attained, for the French system of mobilization in 1870 was almost as bad as ours would be now, if, under our present military organization, we were to attempt to devise a scheme for mobilizing the army; for the vice of the French system was the same as our own, and may be summed up in one word—Centralization.

It is said that when the Emperor asked his War Minister whether the army was ready for a campaign, Le Bœuf's answer was that they wanted nothing, "not even a button to a gaiter." Much indignation arose when it was found that the army assembled on the frontier want-

ed almost everything that was necessary to render it capable of motion. Yet, strange as it may seem, the words of Le Bœuf were actually true; the stores were in existence, and were for the most part used in a later period of the war, but they were in their wrong places at the moment of mobilization. The French system, like our own, was based upon a *maximum* of responsibility upon the Government and in the capital, a *minimum* of trust reposed in the commanders of country districts. The chassépôt was at that time, with all its defects, the best infantry arm in Europe, and there were available 1,037,555 chassépôts. So that deducting 30,000 handed over to the navy, there remained more than three times the number requisite for the field army. In addition to this the small arm factories could turn out monthly 30,000 stand of arms. The field gun had not been improved since France, first of all nations, employed rifled artillery in war. But the difference in efficiency between it and the Prussian field piece was very slight in comparison with the superiority of the chassépôt over the needle gun. At the beginning of the war the French possessed no less than 3,216 rifled field guns, besides 581 rifled mountain guns, and 190 mitrailleuses, giving a total of nearly 4,000 pieces of artillery. There were 3,175 gun carriages; 7,435 ammunition waggons, so that there was sufficient of modern *matériel* of modern construction for 500 batteries of six guns each. Besides these there was all the *matériel* for 360 smooth-bore batteries. But there were only horses and men available at hand for the 164 batteries of the field army, and of these 10 batteries were in Algeria and Civita Vecchia. So that, inclusive of mitrailleuses, batteries, only 924 pieces could really take the field at the end of July. The Garde Mobile had a very inferior armament; and as there was no organization for the equipment of a second army for the field, the field army then being mobilized upon the frontiers was the sole hope of France. To that mobilization we will now direct our attention.

As is the case in England, only a part of the Army had any definite organization in corps—namely, the Guard, the Algerian troops, the armies of Paris and Lyons, and the troops temporarily organized at the Camp of Châlons. When war broke out, separate regiments had to be combined into Brigades and Divisions; the Staffs had to be newly organized,—so that, as in England, “the whole war organization was not called into existence until the critical moment had arrived.”

The centralization of military administration caused, as it must cause in any country, an overwhelming pressure upon certain departments when the moment for action came. During peace the *matériel* for equipment was concentrated at a few places. The Intendance being as in England, little employed in time of peace, was unready when war came. Stores of transport carriages were accumulated at Vernon and Châteauroux, as, on our English system, they would be at Woolwich. Dépôts of camp equipment had been formed principally at Paris and Versailles. No wonder that Von Moltke says: “Rapid distribution to the different Corps from these dépôts on a general mobilization was a work of extraordinary difficulty.” According to Marshal Niel’s plan the men necessary to complete the war strength of the battalions should be able to join their

regiments on the 9th day after the order for mobilization if they happened to be stationed at the dépôts whence they received their clothing and arms, and Niel had further calculated that the troops could, by using the telegraph to call in their Reserves, be at their station in readiness to march on the 12th day. Thus, as the order was issued on the 15th, the troops should have been ready, complete in numbers and in transport, by the 28th of July. But, by the French system, like the English, only 35 out of 100 infantry regiments were in the same garrison with their dépôts upon the outbreak of war. For instance, the 87th Regiment was at Lyons, while its dépôt was at St. Malo. The 98th was garrisoning Dunkirk, but its dépôt was at Lyons. Thus every soldier not actually serving with the colours, even if he were in the district where his regiment was quartered, had to be forwarded to his dépôt, and when clothed to be conveyed back to his regiment. Further, the dépôts themselves had to be supplied with many articles of equipment and with the necessary transport, because these were concentrated in a few places, and, as in England, the system of centralization required that an order should be issued from the War Ministry before arms and many other necessary articles could be supplied. As it was considered essential to get the regiments concentrated into Brigades and Divisions, so as to bring the troops and the Staff together as soon as possible, and as there was no district system for concentration, the whole country was soon covered with battalions on the march or in railway trains, and with reserve men flocking to their dépôts, or from them, to catch their battalions already in motion. The number of railway trains was insufficient; how could they be otherwise? There was a dense accumulation of men at the different dépôts, and such a state of confusion, directly consequent upon the system of centralization, that, while some of the Reserves alighted at places where no one knew the temporary position of their regiments, the Commandant of the territorial division at Marseilles telegraphed, "9,000 Reserves here; I do not know what to do with them in order to give me room, I shall ship them all on board the transports in harbour for Algiers." And the Chief of the Staff had to inform the War Minister that, according to reports received from the dépôts, the Reserves were in readiness, but had no instructions where to join the field battalions. Such being the state of confusion, it is hardly surprising that in many cases the Reserves joined their regiments at last deficient of their necessary equipment; many of them were without utensils, water-lasks, and *tents d'ubris*. The overworked War Office appears to have lost all control over the mobilization, and, according to Von Moltke, when the Emperor joined the Army on the 28th of July not a single corps was up to its full strength or in a really effective condition for the field. The regimental and corps transport was incomplete; they were deficient in horses, ambulances, commissariat columns, and especially in sick bearers, veterinary surgeons, trained soldiers, and officials for the administrative branch. Most of these last arrived very late, so that some of the Divisions had none at all at first. On the 28th the Intendant of the 1st Corps reported that he could not horse the waggons for want of men and horses. Much of the harness



belonging to the Artillery Train was of no use. Some of the ammunition reserves were not at hand. Others were incompletely equipped, and in some places there was no mitrailleuse equipment whatever. Large consignments of maps had arrived—maps of Germany, but not one of the frontiers of France !

Such being the internal condition of the Divisions concentrated for an offensive movement against Germany, a further and even more startling fact remains to be told. There were whole bodies of troops of whose stations the Head-Quarter Staff were in complete ignorance. The Chief of the Staff had to telegraph to General Douay, "How far have you progressed with your formation ? Where are your Divisions ? The Emperor commands you to hasten their formation with a view to joining MacMahon in Lower Alsace as quickly as possible." Next day the same General, in reply to an application, was told that "There is no train division in Metz and no camp equipment which can be placed at your disposal ; you did well to apply to Paris ; renew your request." Paris, Paris, Paris ; always Paris had to be applied to. If Reserves were assembled and could not move, they could only apply to Paris for help ; if a batch of them found themselves dropped at a railway station where no one knew any thing about their regiments, they had to telegraph to Paris. If a General wanted horses, carriages, food, clothing, he could not get an animal or a vehicle or a ration except from Paris, or by an order sent from Paris, and from Paris at last came orders denuding the fortresses of such supplies as they had, and of almost all their troops, for the strengthening and sustenance of the field army. All this wretched confusion occurred, not because there were no stores, but because the War Office at Paris had kept all the administration of them in its own hands, and had never understood the vastness of the task of mobilizing a great army. Let no smile pass over the face of an Englishman when he reads Von Moltke's accounts. We, the practical nation *par excellence*, have the same evil system of centralization, the same blind confidence in what we could do on the spur of the moment ; and the case of France in 1870 would be ours if we were called upon suddenly to mobilize all our available troops to resist invasion. The difficulty has nothing to do with conscription or general service. These gave many men, but not organization. The French have conscription and a talent for administration. The real truth lies in this—that an army is never tried except in war. If the officials charged with its organization and administration are not students of war, if the army is regarded as a peace weapon or a political plaything, it will never be fully prepared for that supreme moment when only it is of any real use.

But how came it that the French Army and nation had suffered such a state of things to exist ? Were there no statesmen to protest, no officers who loved their country better than the favour of Marshal or Emperor, none to break through rules of etiquette and set France free ? There were such, but they were few, and their voices were soon stilled lest the Court and the Government should become unpopular as soon as their carelessness became known. The Army had been so often used to subvert the Constitution that no ruler dared trust it unless he held in

his own hands all the guiding-strings and could keep the troops devoted to his interests by a system compounded of flattery and despotism. The Germans always speak in high terms of the gallantry of the French soldier, and Von Moltke speaks gently of his faults, as becomes a gallant rival, but he is not silent on the subject, and his words are worth attending to. We will endeavour to give their import as plainly as we can.

The internal state of the French Army had many serious defects. The law on re-engagements, exemptions, and endowments had a prejudicial influence upon the French soldier, and the long furloughs, formerly unknown, had a tendency to damage his military discipline. So that even in the opinion of his own country-men he was not in 1870 what he had been in the Crimea and in Italy. The non-commissioned officers appeared to have degenerated; the best of them sought more remunerative occupation in civil employment, "The corps of officers was equally deficient in homogeneity. Nearly one-third consisted of former non-commissioned officers." The best officers at the time of the war were, according to Von Moltke, the older subalterns, for the juniors did not devote their entire abilities to the service, and those of higher rank had too often attained their superior position through "the prevailing favouritism extended even to persons of tarnished reputation." Naturally, those not promoted were somewhat disgusted with the conditions of the service; for, as Von Moltke says:—

"The element of favouritism had raised into high positions many men who were unequal to their duties exercising its disastrous influence here as it ever will."

"In these matters the side taken in politics was mainly considered. Owing to the constant change in the form of Government, that loyalty and attachment to a lineal dynasty which in other countries averts serious dangers to the public well-doing had ceased to exist both in the army and in the nation. The French officer, and even the private soldier, serves his country, and serves it with submission and devotion, but he does not cleave to the changing form of the head of the State with that lively sense of duty which sacrifices all its strength in an unconditional submission to authority."

Then Von Moltke points out a fault which is but too prevalent among the officers of the English army—a fault which they, like the French, almost dignified into a virtue, and which is strangely absent in Prussian military society. He says that the French officer and the French nation are animated by a high, and in many respects an excusable, confidence, but they are, at the same time, too apt to depreciate others. Their whole education tends to inculcate the conviction that France is far ahead of all other countries. Travellers who have visited the great picture-galleries at Versailles will remember how every battle-piece was described to him as a triumph of French arms. If a young French officer hears of defeats at all they are accounted for by secondary and accidental circumstances, or by treachery. "Search after truth does not repay the trouble; to acknowledge it would be unpatriotic." Thus it comes

to pass that, exactly contrary to the German habit, the young French officer troubles himself little about foreign countries, their language, and institutions. To those accustomed to military society in both nations it was very striking to observe how modest were the German officers before the war in speaking of the rivals whom they knew they must soon meet, and, on the contrary, how recklessly and boastingly French officers depreciated the German troops, whom they generally called Landwehr. Von Moltke remarks that the French had scarcely a conception of the strong feeling lately animating the whole German race, a feeling of common nationality and determination both to achieve and to defend their unity. The French were completely surprised at finding an enemy worthy of their steel. "Only a few clear-sighted men believed that they had anything to learn in the military institutions of foreign countries." Among these was Marshal Niel, whose measures as War Minister were certainly good; but he did not live to carry them out, and Von Moltke points out as a grievous mistake Niel's regulations laying down the defensive as the tactical system to be pursued, as a rule, by the French Army. He criticizes the action of the cavalry, and says that though Niel assigned an independent action to this arm in advance of the battlefield, deprecating its employment in masses during the battle, "it needed special orders from the Emperor and Marshal Bazaine to induce the cavalry to reconnoitre the ground even for the distance of a few kilometres." Contrary to the generally-received opinion, he praises the manœuvring power and mobility of the field artillery, and asserts that, in contrast with the other arms, it was always at hand, and always effective. We believe that the truth concerning its alleged failure is to be found rather in a want of its combined action with the other arms than in special defects of its own.

"The latest French 'field exercise of 1869' was based in the most striking way upon the Prussian, entirely abandoning the previous formation for battle: but it did not know how to embody the spirit of them. Careful elementary training was ignored; to say the most, a little more value was attached to shooting; but this was, nevertheless, very superficially treated. The value of that binding medium, Prussian discipline, which exists in the mutual understanding between officers and privates in the strictest training even in the most unimportant duties, which makes obedience second nature, and permits of a high state of discipline with small 'defaulter's sheet,' was completely misunderstood."

Here, then, we have, on the authority of perhaps the greatest soldier of the age, a calm statement of the faults which led to the ruin of the French cause, and they may be summed up very shortly—over-centralization, instead of a proper gradation of responsibility; over-confidence, springing from want of knowledge; and favouritism, which destroys a high tone of thought, teaching the members of a noble profession to become courtiers and sycophants, and leading inevitably to a false condition of discipline, kept up only by fear and certain to break down in the first hour of trial. We shall pursue in another article the consideration of this most important contribution to the history of our times.

In the previous article we have described the confusion which attended the attempts of the French to mobilize their regiments rapidly and concentrate them on the frontier. Yet the war was no sudden surprise coming unexpectedly upon the Emperor and the Government. A struggle with Germany had long been in contemplation, and it cannot be supposed that plans for its successful execution had not been formed beforehand. There seems to have been a great want of that exactness of calculation which might have been expected from such a nation as France, which puts mathematical studies in so high a rank for its military students. Von Moltke says "that an error was committed in assuming that the concentration of an army by rail could be effected with order and precision, without a very thorough and comprehensive preparation." It seemed to lookers-on as if there was no plan for the attack of Germany, so feeble and hesitating was the demeanour of the troops when they arrived upon the frontier. That there was a plan has been told, however, by the Emperor Napoleon himself, in a *brochure* which appeared during the latter part of the war, and which, if not written by the Emperor's own hand, was at least inspired by him. The French Commanders appear to have been aware of the great superiority which united Germany could oppose to the military forces of France. Assuming that the number of effective combatants never exceeds half of the nominal force of an army, they calculated that Germany could bring into the field 550,000 men, and France about 300,000. Greater odds had often been faced by the first Napoleon, and it was supposed that by a similar strategy to his, consisting in paralyzing a divided enemy by rapidity of aggressive movement, the German forces might be either prevented from complete mobilization or at least beaten in detail. Prussia, it was said, if isolated from South Germany, would only have a force of 350,000 combatants. Bavaria might be cowed into submission, while, with the first success, Austria and Italy would join France. It seems to have been forgotten that in 1866 Prussia alone had brought into the field 350,000 combatants, and that her military power had since increased to a very considerable extent. The calculation as to the forces of united Germany was even beyond the mark actually attained at the beginning of the war, for Von Moltke tells us that Germany, including the North German Confederation, Bavaria, Wurtemberg, and Baden, produced 462,300 Infantry, 56,800 Cavalry—total, 519,100 men, with 1,584 guns, for her field army though the effective strength, including non-combatants, amounted in August to 1,183,389 men, all of them more or less trained to war. It is impossible to say what might have been the effect created upon South Germany and Austria by the rapid advance of 250,000 Frenchmen into the midst of Germany. According to the Emperor's plan, which was communicated in Paris only to Marshals Mac-Mahon and Le Bœuf, the first concentration was to be effected thus—150,000 men round Metz, 100,000 at Strasburg, and 50,000 as a reserve in the camp at Châlons. The 250,000 from Metz and Strasburg were then to cross the Rhine near Maxan. After binding the South German States to neutrality, the French with or without the assistance of Austria, to seek out and do battle with the Prussian Army, which it was expected would be weakened by having

to detach considerable bodies of troops to guard the Baltic coast against the French Fleet conveying transports with an expeditionary force. According to this plan everything depended upon rapidity of concentration and sudden movement; in no slight degree, also upon the patriotism and courage of Southern Germany. The scheme was not the accurate calculation of an expert player in the game of war, but rather a heavy stake thrown down on the table by a reckless gambler, for it is well known how the Emperor had been warned of Germany's readiness and unity of spirit by Baron Stoffel. Perhaps the honesty of the soldier was counted for nothing against the diplomatic reports of the Emperor's own creatures. Be this as it may, the calculations upon which the strategic plan was based mistook the temper of the German nation, under-estimated the time necessary for the concentration of the German Army, and over-estimated the marching powers of the French troops. For, we are told, it was perfectly well remembered in Prussia that the Imperial Army in 1859, though it mustered but 100,000 men marched on an average only 4½ English miles daily between the victory of Magenta and the Battle of Solferino. Again, the French Army was hampered in its freedom by a measure the result of the prevailing principle of centralization and supposed political exigency. The Emperor himself, by no means a great General, assumed supreme command, and that with such stringency that none of the Generals except those we have previously mentioned were acquainted with the plan of the campaign. While the Generals of Division were striving with new staff and inexperienced administrators to prepare their commands for the field, forced in every emergency to telegraph to Paris; while the Cavalry, unpractised in intelligence duties were unable to give any account of the enemy; while commanding officers were receiving orders from the Head-quarters at Metz one day, only to be countermanded the next, the whole idea of a concentrated attack seems to have been lost, or at least in abeyance, and the troops were spread out on the 28th of July, when the Emperor Napoleon appeared on the scene, over a line measuring some 150 miles, their rear detachments being as far back as Châlons and Paris. Under such conditions a vigorous attack was impossible. But politics had determined the declaration of war, public opinion in France clamoured for conquest and the Emperor dared not withstand it. His proclamation on joining the Army proved that he still contemplated an offensive movement.

**" PROCLAMATION OF THE EMPEROR NAPOLEON III. TO THE ARMY.**

"Soldiers!

"I am about to place myself at your head to defend the honor and soil of the country.

"You are pitted against one of the best armies of Europe: but others which were quite as worthy have been unable to withstand your bravery. The same thing will occur again. The war now commencing will be long and severe, for its theatre is one which bristles with obstacles and fortresses, but nothing is too difficult for the persevering efforts of the

soldiers of Africa, the Crimea, China, Italy, and Mexico. You will again prove what the French Army, animated with the feeling of duty, fortified with discipline, and burning with the love of country, can perform.

“Whatever may be the road we take beyond our frontiers, we shall come across the glorious tracks of our fathers. We will prove ourselves worthy of them. All France follows you with its fervent prayers, and the eyes of the world are upon you. On our success hangs the fate of liberty and civilization.

“Soldiers! Let every one do his duty, and the God of Armies will be with us.  
NAPOLÉON.

“Head-Quarters, Metz, July 28, 1870.”

From the sad spectacle of a gallant army ruined in advance by the fault of its administrators and feverishly decking itself for the shambles, let us turn to the contemplation of that system and that national temper which have raised Germany to the first position among great Military Powers.

The effect of general service as practised for many years in Prussia is to produce an enormous Army in war, and to raise the tone of that Army, but not to keep it in readiness for sudden emergencies. Such readiness depends upon other considerations, and is as much or even more in the power of such a country as England, where the whole strength of the nation might be concentrated upon the preparation of a moderate force with an effect inversely proportionate to the number of troops. It is an error never to be too strongly combated to suppose that this country cannot be ready for sudden war because it does not suffer conscription, and raises its Army by volunteering. We entreat civilians, as well as soldiers, to follow us while we attempt to set forth, as shortly as may be, the reasons why Prussia, and Germany which now imitates Prussia, is always prepared for war at a short notice. The vital principle is exactly opposite to that of the French. Instead of centralizing military administration, Prussia has worked out the principle of decentralization and definite responsibility of individuals; and instead of leaving all to be done at the last moment, in a hurried and perfunctory manner, there is not a single step in the mobilization of her forces which has not been arranged beforehand. There is nothing new or startling in the Prussian idea. It is but the principle of division of labour carried out in the organization of an army as Adam Smith described it to be in a pin manufactory. Each official has a definite duty to perform and definite instructions how to perform it, so that no meddling is required from Berlin, and no uncertainty exists in the various districts. The War Office knows to an hour when each *corps d'armée* will be ready and where each Division and Brigade will be with its General who knows his officers and soldiers, and who is served by a Staff equally well informed.

Recruits in Prussia have to serve three years in the active Army, though, for economical reasons, they are generally sent home some

months before the expiration of their term ; then four years into Reserve, after which they fall for five years into the Landwehr, and need no longer expect to be put into the first line in war except under extraordinary circumstances. The Landwehr, together with young untrained men, have generally enough to do on the lines of communications, where they are being taught all things necessary to enable them to take their place in the front line should their help become necessary. The great fact is that the active regiments are always associated with their Landwehr battalions, their reserves, their depôts of troops, arms, clothing, transport, and supplies of all kinds. Not an article of equipment has to be sent from Berlin or elsewhere. Everything they need is to be found close at hand in their own districts. There is no choking of railways with men hurrying to and fro before they can be equipped. Every commander of a district Landwehr battalion knows who are the men to be called up instantly from the Reserve to complete the active regiments, and if any of them are not close at hand there are letters already written to recall them, enclosing railway orders for their use. The clothes and arms are ready for them when they join, and they are then within a short distance of their regiments. All the transport of each Corps is present in its district. There is a definite plan to supply the extra horses required. In a given number of days, known beforehand, each Corps is certain to be perfectly ready for active service and in possession of every requisite for a campaign ; while arrangements have been made for the supply from its district of all things likely to be expended during a war, whether it be short or long. The district feeds the children of its soil with whatever they cannot obtain in the enemy's country, and assumes at once the charge of the wives and families left behind. In the district, after the troops march, the remaining reserves and recruits are being taught their duties as steadily as in a time of profound peace, and a regiment calls these to its standard as soon as it has lost by wounds or sickness one-tenth of the men who marched with it. By the French system an army is rapidly collected in the part of the country nearest the threatened frontiers, but it cannot move for want of equipment, nor can any one say certainly when it will be able to move. The men have been hastily collected from various parts of the country—individual soldiers often lack clothing and arms, the General and his Staff are new to the men, there is confusion, irritation, and mutual mistrust. A body of soldiers are there eating up the country or starving for want of supplies. Army there is none, great or small, for many of the most essential elements of an Army are wanting.

On the other hand, the German system is, as Von Moltke expresses it, to prepare either completely or not at all, and in a very few days after the War Office has telegraphed the order to mobilize, the country produces a number of small armies, each perfectly prepared to act instantly as an independent body or to join the others at a place ordered. Moreover, the plans for every conceivable campaign have been drawn up during the leisure of peace ; the railway arrangements have all been made, and only need one word from the Chief of the State to confirm the projects of the General Staff. In fact, the various depart-

ments have done their work so well in peace that the order for war puts upon them no stress whatever.

The working of this organization in 1870 was shewn in the sober steadiness as well as the rapidity of the mobilization. Though the French had been making minor preparations for some time, such as collecting forage returning cast horses to their batteries, equipping transports, preparing the army of Algiers for a march, arranging for railway transport, not a single move was made by the Prussian War Office till news came that on the 15th of July the French reserves and garde Mobile had actually been called in and the Fleet ordered to be equipped. Then at last, on the night of the 15th, 16th, the order was issued for the mobilization of the whole North German Army. On the 23rd some of the corps were perfectly ready to take the field. As long beforehand as in 1868-9 a plan for such a campaign had been drawn up by Von Moltke, and in anticipation of its meeting with approval, "all the necessary preparations, down to the smallest details, were made beforehand," so that when His Majesty the King arrived at Berlin on the 15th of July he had only to signify his approbation, whereupon the date of the first day of mobilization was inserted in the marching and time tables which had been worked out for each separate regiment. Every wheel and pinion in the mighty machine was in order and well oiled; at a touch of the finger the steady motion commenced, and never ceased its unhesitating, yet unrelaxing labour till the Armies of France were swept from her soil into captivity. Paris was taken and the toils of war were checked, to give place to the cold cruelty of diplomacy.

And how different was the action of the minor States to that slow, timid movement which left Austria in the lurch in 1866! In that year the plan of campaign had been settled, and included the march of the Bavarian Army to join Benedek in Bohemia. When the time came, the troops of King Louis were detained at home to be beaten in detail. But Prussian organization and Prussian vigour had since then transformed the Bavarian Army, which had been remodelled on the type of that of the North German Confederation. The only differences worthy of note were that the duration of service in the Reserve was reduced to three years, and, for financial reasons, the time of service with the colours was so short that, on an average, the Infantry soldier was only about a year and a half in the hands of his drill instructors. The drill of the Infantry had been altered to suit the new weapons: the six companies of the battalion had been changed into four, so that each one was stronger than by the old organization. In the Cavalry two regiments had been reduced, and the remaining ten had received an increased establishment of horses (25 per squadron), and the regiments were formed, as in Prussia, into five, instead of four squadrons. In the Artillery, 14 new batteries had been raised, the Engineers had been augmented by two companies per regiment and re-organized. Decentralization had abolished "the general command" of the four Divisions, and substituted for it two corps commands at Munich and Wurzburg. The mobilization and war formation were regulated on similar principles to those of North Germany, and though there had not been



sufficient time to establish completely the 32 Landwehr districts into which the country was to be divided, 16 Landwehr battalions had been formed, one for every two districts. It is worth while to remember that because the organization had not been fully effected from want of time for its development, the Bavarian Corps during the war were not filled up, but became reduced to extremely small dimensions. A most important step was the adoption without change of the Prussian *Etappen* system, lately described in these columns. The Grand Duchy of Baden had adopted the Prussian military institutions almost without alteration. So far had its confidence gone that its Infantry were armed with the needle gun, and the Prussian breech loader became the arm of the Artillery. Würtemberg alone had resisted innovation to a considerable extent, but it had increased its Infantry companies and Cavalry squadrons, adopted the needle-gun and the Prussian drill, and transferred much of the corps management from the War Ministry to the corps commander.

The Emperor Napoleon III. exclaimed, soon after the declaration of war, that he had been "deceived." Deceived indeed, not only in the readiness of his own Army, but in the temper of South Germany. Though a minority in the Bavarian Chambers desired to maintain an armed neutrality, King Louis and his Ministers were of a different mind. His order for mobilization was issued on the 16th, only one day after that of North Germany, and he declared at the opening of the Assembly that,— "True to the treaties of alliance to which I have pledged my Royal word I shall join with my powerful ally for the honour of Germany, and through her for the honour of Bavaria, if duty demands it. The first day for mobilization was appointed for the 17th and on the 19th, in accordance with promises made to Prussia after the war of 1866, the Bavarian Army was placed under the order of King William. King Charles of Wurtemberg hurried home from St. Maurice, reached Stuttgart on the 17th, and forthwith issued orders for mobilization. On the 21st the Ministry declared to the Chamber that the integrity of Germany was threatened, and that it was necessary to unite with Prussia. Baden had long been a fast friend, its mobilization was ordered on the night of the 15th, 16th, and on the 22nd an official declaration was made that the Grand Ducal Government considered Baden to be at war with France.

Prussia herself had not been idle since 1866, She had brought the whole of North Germany into a condition of military organization similar to her own. The acquisition of Hanover, Schleswig-Holstein, Electoral Hesse, Nassau, and Frankfort, as well as the amalgamation with the Prussian Army of the smaller Federal contingents, had reinforced her own strength by 21 regiments of Infantry, three Rifle battalions, 17 regiments of Cavalry, three regiments of Field Artillery, three Divisions of Garrison Artillery, three battalions of Pioneers, and three battalions of Train. From these reinforcements, together with the independent contingents of the two Mecklenburgs and Brunswick, there were formed three new Prussian Army Corps, the 9th, 10th, and 11th. The Royal Saxon Army, re-organized on the Prussian model, formed the 12th Army Corps, and the Grand Duchy of Hesse furnished a contingent, which was

called the 25th Division. Since 1866 the Cavalry regiments had been augmented to five squadrons instead of four, one of them being intended to remain at home as a *dépôt* on mobilization. The Artillery had been equipped throughout with rifled guns. The Landwehr districts had been re-arranged, and their number increased from 116 to 216. The experience gained in 1866 had been brought to bear upon the mobilization of the Army, which had been materially improved, especially in point of rapidity. The *Etappen* system had been completely re-organized upon the plan recently described in our columns, and especial attention had been devoted to tactical matters. The order of march and the regulations for the employment of Cavalry and Artillery had been modified in accordance with the experience of 1866, as they have since been modified, in fact, if not in the regulations, by the light thrown upon modern war in 1870-71. The details of the mobilization and marches as they actually occurred, though extremely interesting and useful to the student of war, are too complicated for general readers. They can be studied to great advantage in the lucid pages of Von Moltke's book. Neither shall we notice the naval forces of either France or Germany until the time comes when the actual duties performed by them can be brought under review ; it is sufficient for the present to say that the Navy of France was overwhelmingly superior to that of Germany, and that the latter Power confined her preparations to the protection of her coast line and harbours against attack. It is suggestive, however, to read that 14 steam torpedo boats and seven torpedo row boats, manned chiefly by volunteer *See-wehr*, were posted to different points in readiness to aid in the defence. We cannot but wonder whether the existence of these torpedo boats was perfectly well known to the English Admiralty, and whether there may not possibly be at this moment other novel inventions prepared or preparing in the harbours of Prussia.

Von Moltke's plan, the modifications introduced into the first conception of the campaign and the preliminary action of the opposing Armies must be reserved for another article.

Among the principal buildings of Berlin is one of palatial size and magnificence allotted to the "General Staff." Not the staff of the Emperor, who holds the superior command ; not the staff of the Minister of War, who rules over the administration of the army. The duty of the "General Staff" is to keep the army always abreast or in front of the times in all matters connected with strategy, tactics, and organization for war, as well as to prepare beforehand studies of all campaigns likely to occur in the future, to receive and digest information concerning foreign armies, and to take care that in no respect whatever does the German army fall behind them. Such is the work of the Prussian General Staff presided over by Von Moltke, and great as is our admiration for the talents of the famous General, we must observe that in no respect have those talents been shown more clearly than in the training of other officers to succeed him when age or death shall remove him from the position he has filled with such honour and advantage to his country. He has not been the life and soul of the campaigns in which

Prussian supremacy in arms has been asserted and maintained, but he has so trained a body of the most able officers in the Prussian army that his mantle is sure to be caught ere it falls to ground. The very book now under review is an emanation from the "General Staff," and we learn by it what sort of work is performed in that building where are assembled the true "heads" of the army.

Whatever may be the contempt of Englishmen for unexpected developments, Von Moltke thinks that "one of the principal duties of a General Staff in peace is the preparation beforehand of detailed plans for the concentration and transport of the troops, with a view to meeting *all the probable eventualities to which war may give rise.*" The time is gone by when an army might sail from English and French ports and spend months in organization before even a definite plan of campaign was determined upon. What is done in Berlin is done also in other foreign capitals, and the only centralization admissible in peace is the concentration of the highest intellects and closest thinkers of the army around the chief who is responsible for the wars of the future. There are many facts, political and geographical, to be taken into consideration by the leaders of an army taking the field, and Von Moltke tells us that "Errors in the original concentration of the army can scarcely ever be made good during the course of the campaign. How necessary is it then, that, the subject should be studied beforehand and plans made in the calm of peace instead of waiting for the turmoil of war and its preparations! All these arrangements can be considered long beforehand, and, assuming that the troops are in readiness for war and the transport service organized, must lead to the result which is contemplated." That is to say, it is easy to prepare in peace plans for placing the army in the most favourable position to meet contingencies calculated upon beforehand. We have no doubt that, had Austria joined France in 1870 the General Staff would have been as ready with its plan to meet a double foe as it was to meet and overcome its well-known enemy. No possible or probable combination of hostile forces remains unconsidered, and, though nothing is less likely to occur, it is certain that the General Staff at Berlin has its plans ready even for an invasion of good-natured, peaceable England. No offence is intended. The study of such affairs is as purely a cool scientific labour as the calculation of the weight of the sun and moon. We will venture to say that though there is doubt in England as to the number of transports required for the conveyance of an army over two or three hundred miles of sea, there is none in the minds of the Prussian General Staff, and there would be no doubt, no hesitation in the preliminary steps, whatever there might be afterwards. Yet Von Moltke and his pupils do not ignore the opposition of the enemy, nor suppose that all their schemes must inevitably prove successful. They only determine that so far as human knowledge and calculation can assist them they shall not be wanting. The preparations will certainly be made steadily and swiftly; the final result will depend upon the courage of the troops and their instruction in the duties of war. When all is ready "we have to grapple with the enemy's opposition. It may, of course, be limited in its effects by our ready and resolute

initiative, but it cannot be crushed except by battle." The manner of first coming into collision with an enemy's forces can be insured or nearly so ; after that, all depends on the results of the first battle. " It is only the laity who believe that they can trace throughout the course of the campaign the prosecution of an original plan, arranged beforehand in all its details and observed to the very close." While the Commander-in-Chief will have the main object of the campaign before his eyes, the means for attaining it cannot be sketched out with certainty beforehand. The project of Von Moltke for a war with France now first presented to English readers, shows exactly how far calculations can be made in advance, and the account of the actual operations gives all that is wanting to afford a perfect study of the commencement of a war.

Prepared in the winter of 1868-9, the project was no doubt but a development of previous ideas on the same subject. Nor did it rest during the months which intervened between its conception and execution. In the meantime new railway lines had been opened, so that the time-tables for each regiment had to be continually changed during peace ; and " this labour was the more heavy from the fact that every acceleration in mobilizing the separate detachments would entail fresh plans for the transport of the whole army, so that the lines might never lie idle from the time the troops were ready." The project points out that the primary object of the operations is " to seek out the enemy's main force, and, when found attack it." Simple as this sounds, it had its difficulties, for it was necessary to bring together a force superior in numbers to that of the enemy at the critical time and place, while the size of the separate masses intended to be concentrated at last for the grand struggle rendered the handling of them a task of no ordinary dimensions. " From the very first movements," says the book before us, " we can detect the leading idea—forcing the main hostile army in a northerly direction away from its communications with Paris." It is highly probable that the attack at Forbach compromised this " leading idea" of Von Moltke, and saved the French army from a fate even more sudden than that which eventually overtook it. Examining the relative strength of the two field armies, and supposing even that the South German States should be terrified or cajoled into neutrality, it was laid down that North Germany would have at first only ten corps available, or 330,000 fighting men, and that France would at the outset of the campaign array only 250,000 or, after enrolling her reserves—a work of time—343,000. If the South German States should take part in the war, or if the three reserve corps and some Landwehr divisions could be brought up in time from North Germany, the proportions would be modified considerably in a direction antagonistic to the French. Every year brought the opening of some new railway line or development of an old one, and increased the facilities for bringing up troops to the point of concentration. But, with or without the South German contingents, it was proposed to make instant " use of the superiority which the North German forces alone confer upon us."

Here we see at once the faith of Von Moltke and his school in bold

offensive strategy. We shall see, later, how that faith led him to prefer giving up, if necessary, a whole district to the enemy, and concentrating the German Army behind the Rhine for future offensive action, rather than standing on the defensive with an inferior force, but in a more advanced position. Mobilize wholly or not at all, and avoid fighting till we are strong enough to attack decisively with the chances in our favor—these appear to be leading principles in Prussian ideas upon war. The numerical superiority of the Germans would be increased should France weaken herself at the decisive point by expeditions against the North Sea coast or South Germany. Sufficient men to guard the coasts remain in the country after the march of the field army, and the Prussian strategists had been able to persuade their allies in the South that, on account of the distance North Germany could not give effective and immediate help in a direct defence of the Upper Rhine and Black Forest, so that the best policy for the South would be to desert their hearths and homes for a time, and join the North Germans on the Middle Rhine, where they would be in a position to check the invader's advance by an attack on his flank. Here, again, we see the principle of flank attack rather than direct defence. Taught by the experience of 1866, and bowing to the opinion of the first strategist of the age, the Southern States, when the time came, did not hesitate to denude their own land of troops in order to array themselves hand in hand with the North German forces.

Great as are the frontier lines of France and Germany, the distance over which they touch each other is considerable. Neutral Belgium and Holland separate them on the north of the gap, neutral Switzerland on the south. For France to violate the neutrality of one of these nations would be to draw upon herself fresh hatreds and additional enemies. Antwerp and Brussels could not be left behind without leaving also a strong force to observe the troops collected in safety there. The further advance of the French army could be met by flank attack from the Moselle better than front defence from the Rhine. The German armies could compel the enemy to form front to the south, and while threatening his communications give him decisive battle. As the distance from Brussels to Cologne is greater than from either Mayence, Kaiserlautern, or Treves, "we should in such a eventuality still be in time to take up a position on our lower Rhine front." For France to attack Switzerland would be to encounter "a strong and well-organized Militia," and to leave her enemy on the flank with the way to Paris all but free, if the German concentration was effected south of the Moselle. The project assumes, therefore, that the French will effect their first concentration on the line Strasburg—Metz, and, "avoiding our strong front on the Rhine, push forward to the Main, separate North from South Germany, come to terms with the latter, and use that country as a base for further offensive operations on the Elbe." In this case, as in the others already named, a concentration of the whole of the German forces available in the Bavarian Palatinate to the south of the Moselle would be the most suitable step to counteract the French plans.

Suppose the French detached a force to advance from Strasburg against South Germany : the Germans could detach also, and operate on the enemy's left flank, checking his advance beyond the Black Forest, and compelling him to disengage himself in a northerly direction. It would only be necessary for the Baden Wurttemberg corps to close in to the Prussian left wing, and, receiving reinforcements, bring about a decisive action not far from Rastalt. If the Germans had to retreat it would be on the main North German army ; if they won, the retreat of the French must be disastrous. In any case, supposing the French to make use of their railway system for rapid concentration, they must disembark in two main groups at Strasburg and Metz, with the Vosges between them. If the Strasburg force is not to act alone, it can only unite with the main force on the Upper Moselle by road. In the Palatinate the Germans would stand on an interior line of operation to the two groups of the enemy. That is to say, that whatever action was attempted by the enemy they would be in a position to counteract it by shorter and easier marches than those of the French, while they might take the initiative against either of the French main groups or against both of them at once, provided they were strong enough. To sum up the result of the argument, concentration in the Palatinate of the whole of the German forces would protect the Lower as well as the Upper Rhine, and permit of an offensive operation in the enemy's country, which if resolved upon in time, would " probably anticipate every attempt on the part of the French to set foot on German soil." Is it necessary to say that the calculations of Von Moltke were exactly verified by the facts of the war, though we believe there was hardly a Government in Europe which did not take it for granted that the French would at least have the advantage in the initiative of invasion ?

We must not ignore the boldness of this plan—a boldness which would have been recklessness in a nation no better prepared for war than France was. For the danger of making the first concentration near the territory of the enemy beyond the Rhine, and in face of the French Army, which ought to have been already advanced in preparation before the gauntlet was thrown down, was very great, and such a decision would only be justified by perfect and well-grounded confidence in the power of mobilizing the armies in exact accordance with previous calculations. In the project Von Moltke notices the " sole remaining question"—rather an important one—" could we make our first concentration beyond the Rhine, in the Palatinate, and close to the French frontier, without endangering its success ?" He adds that " in his opinion" the question may be answered in the affirmative. He was right, but the conception of the project was so bold, and its execution in safety depended upon such a variety of circumstances, that we are even now appalled at the courage and decision of the man who could take the responsibility of it. We shall see presently that on the eve of its execution the full project of the great strategist proved too daring for some of His Majesty's advisers. It was modified at the cost of some delay ; yet after all, it might

have been executed in its full integrity. Von Moltke argued that the scheme of mobilization for the North German Army was complete "down to the minutest details." Six through railways were available to the district between the Rhine and the Moselle. Time-tables, indicating the day and hour of departure and arrival of every regiment, had long been prepared and kept corrected up to the present date. Those regiments were certain to be perfectly filled up and completely equipped before they started. "The first detachments could be landed by the tenth day close to the French frontier, and on the thirteenth day the combatant troops of two army corps could be collected there. On the eighteenth day the number of our force would amount to 300,000 men, and by the twentieth day they would be completed with nearly all the trains." Criticism is dumb before the astounding fact that on the twentieth day exactly from the night when the mobilization was ordered—the sixteenth after the French declaration of war—not only were the German armies concentrated, but one of them, that of the Crown Prince, entered France and fought the battle of Wissemburg, settling there, at once and for ever, the question of whose territory should be invaded. And this was the result of studying war during peace and of taking trouble. We repeat once more that this exactitude of calculation has nothing at all to do with conscription or with greatness of military power. Every nation pretending to be ready for war might and ought to be able to do the same, and the smaller the army the easier would be the task.

The project goes on to decide how the forces were to be grouped. The 1st Army, consisting of the 7th and 8th Army Corps, were to form the right wing near Wittlich, on the Moselle. This concentration was carried out exactly, and the army placed under the command of Von Steinmetz. The 2nd Army, including the 3rd, 4th, 10th, and Guard Corps, was to concentrate in the centre by Neunkirchen-Homburg on the nineteenth day. The Reserve consisting of the 9th and 12th Corps, was to be close behind the 2nd Army, by the same day, and Von Moltke calculated that "it is very unlikely that the French will be able to attack our 2nd Army, which is the most advanced, at an earlier date with a superior force." Even if the French should concentrate all their force against the 2nd Army, and oblige it to fall back on its reserves, it could still accept battle on the twentieth day with a force of nearly 200,000 men, completely prepared in all respects, and occupying an exceedingly favourable position near Mannheim. Von Moltke well knew the defensive power of the breechloader and the rifled field guns, and was sure that the 2nd Army could hold its position long enough to re-inforce it from the 3rd Army, which would, under the circumstances, be free, while the 1st Army would be sent over the Nahe upon the flank and rear of the enemy's advance. In this case, with "only moderately good management," 300,000 men might be concentrated for a decisive blow. But he assumed as probable that the 2nd Army would hold its ground on the frontier, that reinforcements would reach it in time from the Reserve, while the 1st and 3rd Armies secured its flanks, and "thus the offensive might at once be taken into the enemy's country." There could be no want of information as to the point of assembly of the enemy's main forces, for there would be at hand four

cavalry divisions of 76 squadrons, and these, supported by infantry, were certain to furnish all the information required.

Now, it fell out that the very mistakes of the French turned to their partial advantage, for the careful watch kept by the Germans over their enemy's movements produced unmistakeable evidence that the French were moving to the frontier without previously enrolling their reserves and without completing their mobilization in garrison. It would not be natural to assume that the enemy would renounce the advantages which belong to an orderly mobilization and organization without crediting him with the desire of some compensation in the attainment of greater aims. So the Germans expected them to cross the frontier with every available man, and a decided superiority at first, in order to check or, perhaps, even prevent, the concentration of the German armies on the left bank of the Rhine. Whatever might be the ultimate fate of such a movement, it would have created what the Prussians desired by all means to avoid—confusion in their preparations. Rather than this should happen they would wait a day or two longer before being in the positions chosen for them by Von Moltke and approved by the King. The concentration of the 2nd Army "was ordered by his Majesty to take place nearer to the Rhine" than had been arranged in the project. Instead of running the trains through to the neighbourhood of Neunkirchen and Homburg they were stopped at Bingen and the troops disembarked there by orders issued on the 22nd of July; and other arrangements were made to suit the change of plan. The 2nd Army, instead of coming up by railway close to the frontier, had therefore to perform a large part of the distance by road. This change of plan is the more instructive because it shows that the Prussian careful forethought in peace does not lead to stiffness and unwieldiness. The alterations were executed, as the original plan would have been, steadily and quietly; and when, on the 31st of July, the front was known to be sufficiently clear, the portions of the 2nd Army which had not yet come up were forwarded by rail to Birkenfeld and Kaiserlautern, while the 1st and half of the 6th Corps, following the 9th and 12th, were to come up by rail as quickly as possible, and the whole being assigned to the 2nd Army under Prince Frederick Charles, would bring his strength by the 5th of August to a total of 194,000 infantry.

The 3rd Army, consisting of the 5th and 6th corps, together with the Bavarians, Wurtembergers, and Badeners, were to concentrate near Landau and Rastadt. Its marches and concentration were effected according to the programme laid down so long before, and the army was placed under the command of the Crown Prince of Prussia.

The case imparted to the movements by the previous preparation left the minds of the General Staff free to observe what was doing in the enemy's country. The hap-hazard way in which the French troops were moved rendered a definite conception of the formation of their Army extremely difficult. A great deal had to be done by guess work, basing the suppositions upon the known grouping of the troops in peace garrisons. But Major Krause, an officer trained under Von Moltke in the



General Staff, being intrusted with this duty, was able to compile a list (order of battle) of the French Army so nearly correct as to require but a few unimportant alterations afterwards, and his list was communicated to the Army on the 24th of July. The formations of the 2nd Corps at St. Avold; of the 4th, 3rd, and Guard at Thionville, Metz, and Nancy; of the 5th Corps between Saargemund and Bitché; of the 1st Corps at Strasburg; the 6th at Châlons; and the presence of two Divisions in Paris, were all ascertained and reported correctly to Berlin. The names of the Corps Commanders and the strength of their Corps in Infantry Divisions were rightly given, and but few errors occurred in the names of Brigade and Divisional Commanders or in those of regiments. The only mistakes of any importance were that the 7th Corps, assembled at Belfort, was supposed to be only one Division, and the two Divisions remaining in Paris were believed to be intended for a naval expedition.

Besides the sources from which information was gained concerning the composition of the French Army, there were frequent dashes of small detachments, chiefly Cavalry, across the frontier to get specific items of intelligence. Take, for example, that Reconnaissance made on the 31st of July by Captain Count Zeppelin, of the Wurtemberg Staff, with three officers and three dragoons, from Lauterbourg in the direction of Wörth. This small party of brave men observing that the Saltzbach was but weakly occupied by Cavalry, pushed on and reached Niederbronn, beyond Wörth. Next day, while taking some needful rest at Schirlenhof, in the very heart of the enemy's country, the little band was surprised. Lieutenant Winslow, an Englishman, was killed, and the rest, with the exception of Count Zeppelin himself, were taken prisoners. But the one who escaped was able to bring back information that the French General Bernis was at Niederbronn with the 12th Chasseurs, and, what was more important, that there were no large masses on the German side of Wörth. This confirmed a reconnaissance made on the 26th on the other side of the Lauter by the outposts, with a company from each of the 4th Bavarian and 4th Baden Regiments, together with a squadron of the Baden Body-Guard Dragoons. The little force entered Lauterbourg levied requisitions there, and cut the telegraphic communication. Such trifling affairs have an influence beyond what appears at first sight. When contrasted with the absurdly feeble demonstrations of the French in front of Saarbrück, where Lieutenant-Colonel Von Pestel with one battalion of the 40th Regiment and three squadrons of the 7th Lancers not only held Saarbrück in face of at least two French Divisions, but covered a considerable strip of the frontier besides, and on the 30th actually drove the enemy out of the St. Arnual forest, such actions have a direct action upon the courage and spirits of the troops. Accounts of them fly like lightning through an Army, and a sense of superiority on one side and of humiliation on the other accompanies the men into their first real battles. The spirit of the German Army was shown by Lieutenant-Colonel von Pestel when he received orders direct from Berlin to withdraw his Infantry and be content with watching the enemy by means of his Cavalry. He had just been reinforced by the other two

battalions of the 40th, and prayed with success that his superiors would allow him to remain.

On the 30th of July a telegram was despatched from the Headquarters of the King to those of his son directing him to advance with the 3rd Army along the left bank of the Rhine, in a southerly direction, to seek out the enemy and attack him. But the 20 days' promised by Von Moltke in his project had not expired, and the Army was not yet in possession of the whole of its train. On the 31st, therefore, the Crown Prince answered that it was necessary to wait yet a little, lest serious complications should arise. On the 31st of July, the day to which the present publication carries the movements of the troops, the 1st Army had one Corps already in advance of Trèves, having refused a rest accorded to it on the 30th, while the other was moving forward, covering with its detachments the whole country from Saarbrück to the neighbourhood of Trèves.

The 2nd Army, under Prince Frederick Charles, who had joined it the day before, was on the 31st still deficient of part of its artillery and train, and was but little in advance of the Rhine, yet expecting soon to be complete and able to move freely. Indeed, the 4th Corps was already well forward and under orders to reach Kaiserslautern next day. The 3rd Corps was to push on to the line Birkenfeld-Casel, in the Valley of the Nahe, with head-quarters at Baumholder, and would then be in close support of the 8th Corps, belonging to the 3rd Army. The 10th Corps was to follow the 3rd, and the rest of the army to move by degrees and as they were ready by the Southern line. The 3rd Army was on or in front of the Rhine in a quadrilateral—Speyer-Carlsruhe-Bergzabern-Neustadt. The cavalry divisions were for the most part in front, covering the concentration of the infantry corps. It was still deficient of part of its trains and columns, as well as of 12 battalions, 15 squadrons, and 30 batteries. But these were all ready, and so certain to be up at the time ordered that the 3rd Army, as well as the others, was able to reply, to inquiries addressed to the several commanders by the King, that they would all be ready and in their places by the 3rd of August.

The feeding of such a huge mass of troops assembled suddenly and without previous warning was extremely difficult, but was performed successfully because the Department whose business it was had not a hundred other things to think of, and knew beforehand what it would have to do on such an occasion. For a time the troops were ordered to supply themselves within the *rayon* of their positions, but 20 field ovens were quickly built, forage was collected in the districts of their own corps, special reserves of 14 days' requirements were collected in the large magazines on the railways and filled up again with food and stores drawn from the surrounding country after the troops had been supplied each day. Further back, at Cologne, Coblenz, Bingen, Frankfurt, Heidelberg, &c., six weeks supply of food, oats, and hay was accumulated. Feeding stations were appointed where the troops passing through at known hours found their dinners awaiting them, as

had been planned months before, and at last with the end of July came a time when the chief work of the railways in carrying troops had been done, and the wonderful Etappen system was able to begin its regular functions. Every Army Corps received a park of 400 waggons, each drawn by two horses, and about 3,000 of the same waggons were placed at the disposal of the General Etappen Inspection. At the end of the month and the beginning of the next about 50 through provision trains were sent to the Rhine. Thus, with magazines full, other provisions coming up from the districts to their own corps, and corps transport in order, there was no more fear of hunger, and a system of supply began which, in its completeness and preparation for all contingencies, is one of the most remarkable institutions of modern times.

All danger of an invasion of Germany was now at an end, and observation of the French army showed the troops busily employed in throwing up earthworks to strengthen their positions. It was time for the King to join his army. His last act on leaving Berlin was to sign a proclamation granting an amnesty for past political offences in recognition of the unanimous rising of the people. He left his Palace for the camp on the afternoon of the 31st of July, and only returned to his capital when France was subdued, and he himself had assumed the title of Emperor of Germany.

We are conscious that but a feeble idea can have been given of the magnitude of the task imposed upon the Chiefs of the German Army, or of the quiet scientific manner in which all difficulties were surmounted. The military student will find his trouble well repaid if he will study the book itself, as far as it has gone, with a map and a determination to master the subject. General readers may perhaps have caught some mental impression of the difficulties attending the sudden mobilization of an army from a peace to a war footing; they may see that it is a different and far grander task than the provision of food for 30,000 men at Autumn Manœuvres, especially as several of the German corps had to be transported many hundreds of miles by railway, the whole work being crowded into a period of less than three weeks from the first thought of war. And they may be inclined to question how England would achieve the task of mobilizing her regular army, reserves, militia, and volunteers, under similar circumstances. Heaven forbid that we should prophesy evil! We firmly believe that when the time comes we shall be ready, but only ready because before then the persistent warnings of every officer who has been present at or studied modern war in its details will have sunk into the hearts of their countrymen and brought forth some good fruit in a general determination not to rest satisfied with anything short of real readiness for war if it be ever forced upon us. At present our system approaches more nearly that of the French than of the Germans, the chief difference being that as yet we have but few reserves to call up and have not even decided upon our transport system, much less provided means for regular supply. We have the same system of centralization as the French had in 1870. Our regiments are not quartered, nor likely to be, in the midst of those who

are to fill up their ranks in case of war, and our Militia, though composed of excellent materials, is deficient in training and in that surest bond of discipline, complete confidence among the men, that their officers will know, not only how to die with them, but how to keep them alive and insure success to their arms. Above all, we have no such institution as the General Staff at Berlin, which includes officers whose business it is to be intelligent, to know all the military progress which is passing around them, and to take care that their own country is behindhand in nothing conducive to the preservation of her safety, her honour, and the dignity befitting a great nation.

We most heartily recommend a study of Captain Clarke's excellent translation of the most important contribution to military literature that has been produced since the enormous development both of numbers and power of weapons which characterize modern armies and armaments.—*Mail.*

---

## THE ROYAL UNITED SERVICE INSTITUTION, WHITEHALL, LONDON.

---

WE have been requested, by the Royal United Service Institution to bring prominently to the notice of our own members the claim it has on their attention as the oldest Institution for the advancement of Military Science in Europe, and to the special advantages it offers to the Indian Army of pursuing professional studies and researches while on Furlough. We feel a pleasure in acceding to this request since much of the success of our own Institution is due to the high position attained by the "parent" one; our objects are the same, the promotion of Military Literature, Science and Art, and whatever tends to the advancement of these objects must conduce to the advantage of both Institutions.

Perhaps, the best method of introducing the home Institution to the notice of our Indian readers will be to give a slight sketch of its origin and progress to the present time.

The Institution was founded in 1831, under the auspices of King William the Fourth, and under the patronage of the Duke of Wellington, and some of the most distinguished Naval and Military Officers at that time in the Service of the country.

At the end of the year it had upwards of 1400 members on its rolls, a respectable number, if we consider, that Naval and Military Science was then at its lowest ebb.

A period of profound peace was perhaps most unsuitable for the establishment of such an Institution, but it fulfilled all that was then demanded of it, and in the first few years of its existence it attained the maximum of 4,200 members, which it has never since exceeded, and it was not a mere United Service Club, for its Library and Museum grew rapidly, and the latter even in 1834 attracted more than 13,000 visitors during the year. The acquisition of the Waterloo model established the Museum as one of the regular sights of London, and in the Exhibition year, 1851, its visitors exceeded 52,000. It is, perhaps, to be regretted, that the Institution did not take that opportunity of recruiting its funds by charging a moderate sum for admission, but it did not do so, and its varied collections in every branch of science and art were then as now accessible only on production of a member's order. The Museum, indeed, was growing too large for the building which contained it, while its care and preservation made a heavy inroad on an income of only £1,200 a year, and the long illness and death of the Secretary, Mr. Tonna, greatly impaired its utility. A new era, however, was about to dawn on it. The Crimean war attracted the attention of all classes to military and naval science, and some changes in the administration of the Institution and alterations in the building it occupied offered an opportunity for an entire resuscitation which was not lost. Under the energetic superintendence of Colonels James Lindsay and Sir F. Abbott aided by the Officia-

ting Secretary Colonel St. Leger Alcock, the Institution may be said to have acquired a new existence, a grant of £400 a year was obtained from Government, the "abstract reports" of the lectures delivered during the year which had hitherto been comprised in about a dozen pages were expanded and printed *in extenso* in the first number of the "Journal" and the museum was entirely re-arranged and re-classified, the element of Natural History which had greatly outgrown the space allotted to it was in a great measure eliminated and replaced by objects of special professional interest. In a word, the Institution stepped into the vacancy which had hitherto existed in the list of learned and scientific Institutions, among which naval and military science had been previously unrepresented and almost unrecognized, and it has since worthily maintained its place.

It is due to the present Secretary, Captain B. Burgess, whom we are proud to acknowledge as an Indian officer, to say that his unwearied exertions have greatly contributed to retain this high position. The Journal of the Institution is now in its 16th volume a volume, which has swollen from the 12 or 14 pages noticed above to upwards of 900, and as each subscriber of one pound per annum receives this volume, we need hardly say it leaves but a moderate margin for the other expenses of the Institution, and that it depends entirely upon numbers for its support and the extension of its efficiency.

The Library contains about 16,000 volumes, to which large additions are made not only by our own, but by foreign governments, independent of private contribution, or purchase; many of our best military authors have borne testimony to the value of the collection, and it is not too much to say that the military student can in his capacity of a member of the Institution obtain access here to professional reports and papers which he could not procure or even see in any other way. Its contents are not restricted to military works, Topography, History and Science are all well represented, and as a specimen, we may note the grand work on Egypt by the Commission of Savants under Napoleon, in 20 volumes, atlas folio, alone valued at £100.

The Topographical Department contains complete sets of the Ordnance maps and Admiralty charts, besides numerous foreign Cadastral Surveys and valuable Atlases such as Kausler's and Sir T. Mitchell's, and miscellaneous plans of Battles and Sieges.

The Museum contains the model of Waterloo (already mentioned) and that of Sebastopol, and a very beautiful one of Trafalgar representing the hostile fleets in the crisis of the great victory. Besides these are a valuable series of almost all the modern systems of Fortification of the last hundred years, and another of the battle fields of the Austro-Prussian War of 1866. Here also is the beautiful topographical model of the Western Pyrenees from which the fine map published by Wyld was engraved by the Reliévo machine.

To these must be added an immense collection of arms of every

class and period, and from every race and country on the globe. Heavy guns are represented by models and sections, and by their fuzes, shot, and shells, in *propria persona*, and last but not least in interest are the relics of our great heroes Cook, Nelson and Cromwell, Wolfe and Moore and of not less distinguished enemies such as Napoleon and Tippoo Sahib.

We have said enough to show that the Institution offers ample intellectual food for its members, and we may add that as it possesses very pleasant reading and writing-rooms looking over what was the river before the embankment pushed it farther away, and as members can receive and answer their letters there, it affords many of the advantages of a club to those who may not happen to be members of a London one at the very moderate entrance fee of one pound and annual subscription of the same amount.

---

## TO CONTRIBUTORS.

---

THE Council of the Institution desire to notify that in future they decline to receive any anonymous papers or communications for publication in their Proceedings. The practice was permitted in the infancy of the Institution to induce contributions, but it has been found to possess disadvantages, and to be inconsistent with the character of the Proceedings of a Scientific Institution, and militating against the cordial unanimity which should pervade all branches of the profession.

By order of the Council,

J. BAILLIE, LIEUT.-COL.,

*Secy. U. S. I. of India.*



# ORIGINAL PAPERS.

---

## I.

### ON THE STRATEGIC VALUE OF CASHMERE IN CONNECTION WITH THE DEFENCE OF OUR N. W. FRONTIER.

BY LIEUT.-COLONEL D. J. F. NEWALL, R. A.

*(A paper read at the branch U. S. Institute, Morar, Gwalior.)*

IN the preamble of an "Abridgement of a Short Historical Sketch of Cashmere," lately presented to the U. S. Institute for India, I incidentally touched on what appeared to me the value of the flanking position of the Cashmere State. Having been invited to "contribute a paper containing in it all that relates to the strategical position of Cashmere," I now address myself to that question; and I would associate with it that of the defence of our N. W. Frontier, which I observe to be one of the subjects on which papers are desired by the Council.

In submitting my views for the consideration of the Council and members of the U. S. Institute, I would at the outset emphatically disclaim any appearance even of dogmatic assertion of special opinion. I well understand that the views of the Society are tentative, and to invite discussion; and nobody can be more willing than myself to lend a respectful ear to candid criticism. With this proviso then I venture to place before the members of the Institute the following remarks on the defence of the N. W. Frontiers of the Punjab, a province in which it has fallen to my lot to pass nearly a quarter of a century of military service. I will now proceed to discuss the subject proposed, *i. e.*, "Cashmere in connection with the defence of our N. W. Frontier."

---

#### THE DEFENCE OF OUR N. W. FRONTIER.

In addressing ourselves to this subject, the question occurs whether it be proposed to defend the frontier "en potence" against an imaginary grand foreign invasion, or whether a mere local defence against the turbulent frontier tribes be contemplated. In either case it may be at once remarked that having advanced beyond the Indus to the foot of the mountains bounding the Deraját, we have thereby acquired the lateral water-way of the Indus as a base;\* an invaluable feature for the conveyance of troops and warlike stores; the existence of which, even

---

\* A railway in the future would somewhat modify this proposition.

did no other reasons present themselves, points to the defence of that river as first line rather than that of the Jhelum or Chenab, on which our means of transport have not become so developed. We will first deal with the latter of the two propositions, *viz.*, the local defence of the frontier against troublesome neighbours across the borders.

In an article on Military Colonies, lately communicated to a local journal, I touched on the subject of *Military villages* as one means of frontier defence; and I see not how I can do better than quote therefrom the remarks referring to this subject :

"Some military nations, such as Russia, Persia, French Algeria, Austria,\* having savage neighbours on their frontiers, have often planted *military villages*, consisting chiefly of volunteers or warlike races prone to arms and fond of war, as buffers between themselves and troublesome neighbours across the borders, who in their raids necessarily first fall foul of the warlike villagers on the frontier and receive a Borderer's welcome! We hold our N. W. Frontier by a gallant force, the nursery of some of our best officers, and in that point of view there is assuredly value in return gained for our vast outlay, but it is suggested that small colonies or *military villages*, bound on certain terms to protect our trans-Indus frontiers, might have proved equally efficient and saved millions of money to the State. An inner line of native troops would, however in any case have probably been requisite to guard our river communications and support the advanced posts. Such a thing also is essentially consonant to the feelings, habits, and traditions of many warlike tribes, within and closely adjoining our borders." Thus much I quote from the article in question, which in fact advocates the subsidizing of *military villages* or small colonies all round our N. W. Frontier, forming an elastic buffer or zone of outlying pickets on our frontier line, and on this point I would remark that the able article on the *Vaziris* lately contributed in a recent number of the *U. S. Journal*, points to partial action in that direction, and it appears not impossible so to manage as to cause those mountain tribes in part to defend us against themselves. "Divide et impera" seems applicable to this as to so many parallel cases. Be it noted also that many of the Frontier regiments are already largely recruited from the very tribes they are employed in coercing; others, for instance the Goorkha Corps at Abbottabad, have become localized; and, "mutato nomine," are to all intents and purposes *military colonies*. I would extend these remarks to the Eusoofzaie tribes, whose traditionally disunited character affords such ample scope for the "Divide et impera" policy, by establishing military colonies or villages on their frontiers; but the question might occur "Qui custodi et ipsos custodes?" We must address ourselves to facts as they exist. To support

---

\* The "Gunge" or "Ganz" regiments of the Austrian Army are frontier levies, bound on the terms of the fiefs or tenure of their lands to defend the frontiers. They were originally organised as a "cordon sanitaire" some centuries ago, against that fell enemy the "plague," then advancing westwards into Europe: and their efficiency having been proved, their organization was retained after the special occasion of their origin had passed. These facts I derive from a friendly critic.

these villages, I would have held the line of the Indus by strong posts at selected points as supports or *inlying* pickets, massing a considerable force behind Attock ready to support Peshawur, and take in *flank* any hostile attempt across the Indus either above or below Attock. The exact locality of such a strong cantonment may be open to discussion, probably the plain of Campbellpore or Sydhunbowlie affords a site fulfilling the conditions demanded;\* and let me here remark that in the station of Abbottabad we possess a most valuable and important point as a flanking support to the Indus line; and it has always appeared to me that the Châchawutnee and Pakli Brigades of the old Sikh times were most happily cantoned in reference to this point of defending the Peshawur valley and line of the Indus generally, and enabling the defenders to concentrate on the inner radius. Circumstances have forced on us the occupation of Peshawur by a large mixed garrison, and, as already remarked, of the Derajât by a gallant native force. Let me say again that I would deprecate any retrogression. I would scarcely have occupied the Peshawur valley by British troops, but having done so, no retreat! Let no ebb, however slight, give color to a suspicion of a receding wave in the minds of our frontier enemies *and subjects*! Rather entrench the station of Peshawur, or what would be better a site near "Cherât" or "Chumkunnie," covering the Kohât and Khybur passes, and hold the valley "en permanence," rather than withdraw behind the Indus as has been counselled: the policy of "*recueillir pour le mieux sauter*" is not understood by orientals, and any such reflex of the wave would assuredly be attributed to weakness and bring about our heads the hornet's hive.

As regards Peshawur, the pivot of our trans-Indus position; were it not for the extreme unhealthiness of the valley at certain seasons, I would not in a military point of view condemn it. Granted that it may be difficult to hold in case of invasion, more difficult still to support from our dépôts in rear; yet its salient position, jutting out as it were beyond the general frontier implies by that very fact *flanking powers* of no mean order. An enemy would pause ere giving such a post the go-by, either by the Kohât or Swât routes; and the mouth of the Khybur it effectively commands. In short it occupies a valuable flanking point, and forms the very pivot or key to the plains of the Indus and adjoining doabs of the Western Punjab. By all means then continue to hold it "en potence;" but to enable it to hold its own and stand a siege, which we may assume would form the prelude to any invasion of the Punjab from that quarter, I hold it should be fortified and be converted into a large "entrenched camp;" and the way I should propose to set about it, is as follows:\* An extensive redoubt or "place d'armes," sufficiently strong to overawe the city of Peshawur and hold its own against field artillery, should be constructed at a site near "Mackeson's post," sufficiently large also to form a refuge for non-combatants of the garrison and to hold the "impedimenta" of

---

\* These questions have doubtless been already well considered and pronounced on by authority far abler than myself, and I feel that in this paper I may hitherto have merely put forth opinions already sufficiently sifted.

the field force. This fort or citadel, besides commanding the city of Peshawur, would also defend by its fire the whole rear and right flank of cantonments, and thus supersede the decayed and ill-placed old fort at present existing, whose defects have been so often pointed out. Two other smaller redoubts should supplement this work, one at certain salient ground near the "Michnee" road to the left front of the R. A. lines; another at the upper end of the station, somewhere near the water-mills on the Khybur or Jelalabad roads. By these means a very strong fortified camp might be formed, and I see not why the soldiery should not in a great degree contribute labor towards effecting this end. This or an entrenched camp near Chumkunnie or Cherát, as already suggested, would, I think, enable Peshawur to hold its own even in the face of a considerable invading force.

This brings me to the second proposition I have assumed, *viz.* the defence of the Punjab (N. W. Frontier) in event of a formidable foreign invasion *viâ* Afghanistan, guided we may assume, by the resources of scientific direction and support. The means of defence as yet indicated, would in that case—except Peshawur fortified as I have proposed—we may fear, possibly prove insufficient barriers to rely on; and would probably form indeed but the pickets of our main defence. We can be by no means certain, that under such circumstances, the line of the Indus might not be lost to us. Be it observed that the Indus is not so efficiently protected by *flanking defence* as are the other rivers of the Punjab, although on the other hand the means of transport on it are at present far more developed than on the other rivers of the Punjab.\* A force might indeed be thrown across that river into the Yusoofozaie country, so as to fall on any enemy attempting to cross at or about Attock: but the hazard of committing any considerable force to the chance of being itself outflanked by such a measure would be considerable. We may fear that hostile tribes, joining the enemy as in the time of Alexander, might render such a step unadvisable. We now approach the real point of our argument, and the main object of this paper. Now would commence the importance of the Cashmere state in the subsequent acts of the drama. We will assume, then, the line of the Indus forced by an overwhelming invading force, and our defending army falling back, as in the time of Porus, behind the Jhelum. And here let me say we possess in the physical formation of the Punjab itself, a defensive system which to my thinking should in all ages have insured its inviolability from conquest. The "land of the five rivers" opposes such a series of obstacles to an invader traversing its successive doabs, by the old conquering routes of the Khybur and North-West passes, that to my thinking it should never, if decently defended, have fallen before any invasion from that quarter.

I have in a little essay entitled "Our Frontier States," touched on the flanking position of Cashmere: and as I find myself unable to im-

---

\* When railways are constructed these conditions will be modified; and greater power bestowed on Peshawur and the line of the Indus; whose value however as a base or highway for military stores will be proportionately diminished.

prove on the suggestions therein propounded, I take the liberty of introducing them into the present paper.

## OUR FRONTIER STATES.

### No. 1.—CASHMERE.

Several recent writers have advanced the opinion that the real system of frontier defence should be sought for *outside* our own frontier line, by fortifying (in the sense of to strengthen) the *outlying* States, such as Persia, Affghánisthán, Khelát, Yarkund, &c., in short advocating what has been called the “*buffer*” system of defence;\* and although this would scarcely include Cashmere which may more properly be termed an *inlying* state within the natural limits of Hindústán, of which the River Indus may be considered the northern boundary,† still it may be viewed, I believe, from the same point of view as forming one of the advanced posts or pickets (so to speak) of our main line of defence. The importance of its position in this point of view as the very pivot of our advanced frontier, cannot be over-estimated, flanking as it does the approaches to and from Northern India; and especially guarding by flank pressure the “Khybur,” that old conquering route of so many invaders both of ancient and modern times. As an illustration, let us take the earliest invasion on record, that of Alexander the Great, about 325 B.C. Starting from Balkh that conqueror, passing through (Is) Kándahár and Kábúl. appears, after emerging from the N. W. passes to have turned north into the Swát valley, where having formed alliances with the frontier chiefs and overrun the country on the right bank of the Indus, he apparently crossed that river at or near Torbela: and advancing through Hazára and Dhumtore, and the modern Rawulpindi to the river Jhelum, found himself there opposed by the warlike Porus, who may probably be styled King of Lahora. He was there detained several weeks seeking a passage. Now was the time for Cashmere to have asserted herself; and had the chief of the *Casparyri* at this crisis, vigorously issuing from the passes of the Pir Panjál, fallen on the flank of Alexander’s army in aid of the gallant Porus defending his native land,—in that case “Macedonia’s madman,” being a hero and a great military genius, *might* perhaps, have found a remedy and fought his way to victory; but, by all the laws of warfare he ought to have been cut off and his army reduced by famine or the sword: but a fatuous Prince—I think *Mihira koola* (surnamed *Hustinuj*—*destroyer of elephants*)‡ then ruled Cashmere, and the opportunity passed of emphasizing for all time the value of the flanking position of the Cashmere state. Nor has Cashmere during subsequent and

---

\* It might be also termed the flanking system of defence. A glance at the accompanying little sketch maps, will rightly show the lines of flanking power. It will be observed that the ancient geographers differ in some slight particulars from the modern; but a sufficiently close approximation exists to indicate Alexander’s route and the flanking lines in both.

† The country up to the modern Hindoo Koosh comprising Beloochisthán, Affghánisthán, and even part of Balk, was called *India Alba* by the ancients, but the line of demarkation has doubtless been more or less distinct at various periods of History, and the line of the *R. Indus* may be taken as the natural boundary of Hindoosthan.

‡ Or *Ravána* of the 1st Gonardya dynasty, according to a corrected list.

more modern invasions of India by the same route ever played other than a quiescent part; and the importance of her flanking position has never therefore been made sufficiently prominent; nor have her resources on such occasions been skilfully availed of by the defensive potentates engaged. Had they been so, it is difficult to conjecture how such invaders as Timoor-Lang, Báber, Jengis Khan, Nádir Sháh, &c., could ever have passed the rivers of the Punjab in safety; for we must remember that the manœuvre indicated above could have been repeated at each of the rivers of the Punjab and with special great effect on the Chináb. But the *Lahore State and Cashmere were too often rivals instead of strong allies*; and so both fell under foreign invasion. Thus much as to the importance of Cashmere as guarding the flank of what may be called the "*Khyber line of least resistance*" into India! Now to turn to its other (or N. E.) flank, traversed by the route from Kashgár and Yarkund, over the Kara Koorum, via Leh and the Tang Lung pass into Roopshú and so into the Lahoul and Kooloo vallies, just now being opened out for trade:—not much is to be said! Let it be noted, however, that where traders and their animals can pass, wild troops can also pass. It need not be noted that the Cashmere State absolutely commands and holds that route.

Lastly; as regards the routes from Central Asia leading direct into Cashmere itself. The course of the following historical sketch will tell of at least two invasions of that country from\* Kashgár and Yarkund apparently by the routes of Leh or Iskardo, of armies 12 thousand strong. And in early times we read of armies advancing from Budúkshán via Yassin and Gilghit into the Cashmere valley; and we may apprehend that in the event (quod Dii avertent!) of future war with Russia, that pressure in the form of THREATENED invasion might be resorted to by a subtle enemy; and in all events an opening to political intrigue exists in that quarter not to be disregarded. Nor, to speak plainly, are these routes so inaccessible to the threatened assaults of barbarous hordes (of Kirghiz and others) from the plateaux of Central Asia at present under the protectorate and influence of Russia, if not already incorporated within that Empire, as it has been the fashion of the advocates of "masterly inactivity" to proclaim.†

Let me not be thought to exaggerate this, into a grave source of danger, above all let me not raise that demi-extinct ghost—Russophobia!" the *Croque Mitaine* of a past generation of Indian Politicians! But of course the object of any hostile demonstration in that quarter would

---

\* Vide the History about the years 1539; and 1557; but as the country of "*Chitra*" is sometimes called *Little Kashgar*, it is just possible that the invading armies of the years 1539 to 1557 may have come by the routes of Gilghit and Astor. At any rate they are stated to have penetrated into the Lar pergunnah of Cashmere, as stated in the text.

† I am fortified in this statement by the opinion of the traveller *Shaw*, vide his lecture delivered at the meeting of the R. A. Institute, Woolwich, 17th March 1873. He more particularly alludes to the great route through *Badakshan* and *Wakhan*, which, as we have seen, *has been traversed by invaders*.

be to endeavour by disturbing the minds of our frontier subjects, to keep amused in the North West as large a portion of the garrison of India as might be. A state of things may, indeed, easily be conjectured when Russia or other nations would employ every means to threaten, and, if possible, intimidate *all* our colonies in general, and so lock up therein as large a portion of our small British Army as possible; and North West India seems by no means exempt from pressure of this nature.

Enough has been said, I suppose, on the value of the position of Cashmere as a "Frontier State."

We may assume the good faith and loyalty of our ally and feudatory, the present Chief of Cashmere. His interests and ours are (or should be) identical. As regards the attitude of our great Northern neighbour; the policy of "*masterly inactivity*," as it has been called, has hitherto kept us from exerting such influence over our frontier states and the Northern Khanates as might perhaps have arrested the advance of Russia a step further back. Several of those states have more than once demanded officers to drill and organize their Armies.\* Such states if supported become the pickets or outposts of our main line of defence, and regarded as such would afford time to our main defence to get under arms and prepare for the shock of war; exactly such breathing time as that ponderous, slow moving animal, John Bull requires to get on his mettle. Cashmere then may perhaps be regarded as an *inlying* picket or grand advanced outpost, and its resources should, I hold, be absolutely subordinated to the general defence of India. We may assume, I trust, the good faith and loyalty of its Chief, who holds this most important post; but I know not whether the time may have arrived when our great feudatories, such as Cashmere, Puttiala, Scindia, and others throughout India should not be quite entrusted with the independent maintenance of "Corps d'Armée" to be considered as portions of the grand Imperial Army of the state.

The History of Cashmere then, an abridgement of which it is purposed to present, would seem to point these lessons of polity.

1st. That the resources of Cashmere and the Punjab should mutually support each other.

2nd. That Cashmere, (and N. W. India) is not absolutely closed against invasion, or at least hostile pressure from Central Asia *via* Kashgár and Yarkund: and also Budákshán and Wakhán.†

3rd. That Cashmere must be regarded as lying within the general frontiers of Hindosthán, and to be included within the scope of any general Imperial scheme of defence for India.

---

\* As regards Kabul it is believed that the Affghans, a high spirited, independent race, are best left to fight their own battles *till their national existence be threatened*; they will then call in foreign aid. *That* probably will be the time to depart from the policy of masterly inactivity; the Power that *then* firmly assists will be dominant in Kabul politics.

† See note on page 6.

4th. That its position in the point of view as flanking the Khybur, and N. W. passes, is in the highest degree valuable.

Under the views then, thus expressed, as to the flanking position of Cashmere, supposing a grand invasion of India from the N. W. After a brave direct resistance, I can suggest no surer subsidiary means to repel it than *subsidizing strongly the country which flanks the successive doabs over which an invader must pass before reaching Hindostan Cis Sutlej*; at each river finding a powerful army in front with an active auxiliary force hanging on his left flank, ever ready, like a mountain thunder-cloud, to pour its sudden torrent on his communications as soon as committed to an engagement with the enemy in front. I regard this formation of the "land of the five rivers" as presenting so formidable a succession of obstacles to an invader by the line of the Khybur, that I pause with astonishment, when I reflect that, with the exception of Mahmood of Ghiznee\* and a few of the earlier Mahomedan invaders, nearly every conqueror from Mahomed Ghori and Tamerlane to the last of them in 1801, (Zemaun Shah) should have adopted it; but in fact most of these invaders had *paved the way by tampering either with Cashmere, Lahore or other states of the N. W.* ere setting out on their expeditions; and attempting the passage of the Punjab rivers. It may be urged that Cashmere is not our own territory and is now, (as then), not heartily with us to repel an invader: This may, or may not be true: but it is held by an ally loyal enough, and astute enough to know well that his self-interest, nay his very *raison d'être*, lies in a hearty co-operation. Fortunately also we possess certain subalpine positions—indicated by the lower flanking line in the sketch map—in the Kóhísthán of the Punjab (such as Abbottabad, Murrie with its dependencies, etc., etc.) to form the nucleus of the flanking force I have supposed. I may here remark that in proportion as "Cashmere" is valuable as an ally, in like ratio conversely might she become potent for evil, if not heartily with us. "Cashmere" then may perhaps be regarded as the great N. W. bastion of India; and, lying, as it does within the general frontiers of Hindostan, its defensive resources should, I hold, be absolutely subordinated to those of the state in any grand imperial scheme of defence for India. This point recurs to my mind so constantly in all considerations of defence for our N. W. frontier that, in fashion of the ancient Greek, I am constrained to reply as to the points of defence for the N. W. frontier that the first is Cashmere! the second Cashmere!! and the third Cashmere!!! So high is my estimate of the value of its flanking position.

---

\* This conqueror in fact in several of his invasions (for he invaded India ten times) adopted the line of the Bolán Pass; and I confess I regard that route as (at present) the "line of least resistance" into India. It will be observed that an invading army once fairly out of the passes by that route can, by simply crossing the Indus, turn all the Punjab rivers, which I insist on in the text as giving such defensive power to that province. To meet such an attack, we should probably assume the offensive (instead of the defensive plans I have endeavoured partially to develop in this paper) and advance boldly to the occupation of Herat, and the flanking line of Kandahar, Kalat, &c., as roughly indicated on the accompanying little sketch map.



These opinions are however fully expressed in the extract given, and are indeed to my apprehension, an obvious corollary of the position I have attempted to establish. This is not the place or occasion to assert dogmatically any proposition, and I trust to escape the imputation of undue assertion of any special opinion which might be deemed crude or ill-studied. Ill moreover would it become a mere soldier to criticise the acts of politicians,—albeit of a past generation and so become historical,—acts probably forced on us by the political necessity of the day, but which have imposed on living statesmen the ungracious task of rectifying or modifying the effects of what I must regard as so grand an error as the cession of Cashmere when within our grasp ; but here again I would quote from the little historical sketch before alluded to :—

“ Let me not be mistaken !—As before said,—our treaty obligations “ bind us ; and I would not therefore seek to weaken but rather to “ confirm and strengthen the Cashmere State ; whose Chief, far from a “ jealous exclusiveness, should seek to draw closer his relations with the “ British. His fine country would then form the great N. W. bastion “ of India—an outwork or fortalice complete in itself ; and the nursery “ of a commissariat overflowing, ready to equip armies full of health “ and strength ready to descend *on the flank* of any aggressive force “ proceeding via Afghanistan—that old conquering route—towards “ Hindustan !

“ Holding in view, that pressure on the *flank* of a rival (or enemy) “ may be considered the surest means of checking his advance, it would “ seem then that strong governments and armies in Persia, Afghanistan “ and Cashmere are amongst the true means of checking further advances “ of the great Northern power, a colossus which, *if it fall not to pieces “ from its own bulk*, must always affect the politics of India, and in “ times of war may threaten or seriously influence the destinies of the “ Eastern world—not to mention Europe. In contemplation of events “ such as these speculations appear to suggest, it may be that *Cashmere* “ be destined to play a great part in the future history of our Indian “ Frontiers. At this stage of its history (1871) the Roman politician “ would doubtless exclaim with Scipio ! ‘ Delenda est !’ Delenda est “ (Carthage) !! Our more honest policy unless compelled to other “ measures by hostile events will probably be ‘ *confirmanda est* !’ “ Strengthen it and render it the great northern bulwark of our “ Indian Empire, of which indeed it is a feudatory though outlying “ province. The great river *Indus* in its entire course then would be “ come, as it should be, the veritable and true northern boundary of “ Hindoostan.”

Viewing Cashmere then as lying within the general frontiers of Hindustan, and within the scope of an imperial scheme of defence, there would appear to be several points on the Upper Indus to be held, by our allies as *frontier* posts ; especially those covering the roads from Central Asia, where a few heavy guns in position might readily

stop armies, Leh, such as Iskardo, (where the Indus widens into a fine gently flowing stream easily navigable for many miles of its course); Acho or Astor, Derbund, Torbeya, Attock, and in common territory, and a few minor points as Katakshoo, Paikuta, Rondu, &c. might be named; but I am scarcely sufficiently acquainted with the Upper Indus to warrant a detailed expression of opinion on this point. The current of the Indus grows slack I believe in certain parts of its course, and ferries, even giving the advantages of lateral water communication, exist. It may be here noted that a disposition to advance beyond the Indus has been evinced by the Cashmere Government, such being contrary to treaty; and I believe also opposed to its own best interests. Were the Upper Indus a navigable river, I would counsel the occupation of both banks; but as it is not so, it should be maintained as the boundary or frontier, for although I have mentioned such points as Peshawur, Kohat, etc., etc. and the other posts in the Deraját lying beyond the Indus as not only salients possessing valuable *flanking* powers, but also as enjoying support from the lateral water-way of the quiet stream of the Indus, this advantage becomes a nullity where a turbulent mountain torrent, such as we may term the Upper Indus, forms the base. At the risk of asserting "platituda" I may remark, that, the principles of old Vauban are eternal; because based on mathematical truths—that old master would doubtless view these advanced posts as the bastions of which the Indus forms the curtain or base, and their lines of support radiating on a common inner centre behind that river (an imaginary sketch line will tend to explain this perhaps fanciful illustration.) An assailant cannot well penetrate within such, without being taken in reverse; so that, if strong enough to hold their own, even for a short space of time, in the face of the attacking force, they guard in flank a zone of otherwise dead ground which the enemy might occupy and turn to his advantage in the passage of the river behind them.

I now approach the end of my paper. In offering these remarks on the defence of our N. W. frontier, for the consideration of the U. S. Institute (as invited to do), I would say that we have presupposed a direct attack either from the Khybur or passes adjacent thereto; but we imply thereby a poor compliment to an astute enemy in supposing him so cross as to adopt that method of carrying out his plans, most obvious to ourselves; and in the same ratio that I propose flanking defence for the reception of his hostile intentions, may we credit him with the perspicacity to endeavour to outflank us! and indeed there may be ways of threatening our N. W. frontier vastly differing from any here presupposed. Instance the line of invasion, via Herat, Candahar and the Bolan pass, already suggested in note at page 13; and I think I may just indicate the possibility of hostile pressure in the direction of Yarkund, and Cashghar or Budukshan. Their considerations however would open out a longer chapter of speculation than is suited to a short paper such as this; and would involve the examination of grander strategy than I would venture to touch on; and would indeed trench too far on the province of the politician to be entered on in a purely military journal. I refrain from en-

tering on this wide subject; simply stating that I hold to the belief and opinion I formed, and expressed so long ago as the year 1854-55, that the real danger lies *within our own frontier* (N. W. as elsewhere), and any theory of defence not based on that supposition, I hold to be futile. This point is noted, I observe, as one of the desiderata for the consideration of the members of the Institute. It in fact bears on the question before us thus much, that it involves the *rear defences* of the N. W. frontier; lest, whilst elaborating a scheme of defence for our *front* and *flanks*, we forget our most vulnerable point and ourselves point the fable of the silly bird who gazing before him, keenly sensitive to the approach of danger ahead, permits the wary fowler to approach from behind and bestow on his tail the proverbial salt.

I will now trespass no longer on the patience of the Society, but conclude by thanking them for the kind attention accorded.

The foregoing paper having been read at the meeting of the U. S. Institute assembled at Morar, Gwalior, on the 30th January 1872, the Chairman (Brigadier General R. O. Bright, C.B.) observed "that he should consider it difficult to convey a force over the passes leading out of Cashmere on to the flanking points suggested, sufficiently strong to produce any appreciable effect on the supposed campaign. He should think that an invading force might mask any such demonstration on its flank and rear communications; and that in reality owing to the nature of the ground, Cashmere could exert but little pressure on an invading enemy."

To this the author replied "that he fully recognized the force of the chairman's objection, which had also occurred to himself; but whilst giving due weight to this pertinent and valuable point of criticism, he would beg to exhibit a map illustrative of the *Military History of Cashmere* (alluded to in the paper just read) whereby it would appear that considerable armies—especially of Sikhs,—have in fact crossed nearly every pass over the Pir Pinjal leading into Cashmere; hence it is assumed that conversely a lightly-equipped select force, such as is supposed in the text, would meet with no serious impediment in converging on any given point of lateral flanking defence, as suggested, to take in reverse any of the Punjab rivers. The writer of this paper has himself crossed nearly every one of the passes leading into the Cashmere valley,\* and can assert from personal examination that most of

---

\* I have annexed to Map No. 3, an index explanatory of the principal *Military events* alluded to in the Historical sketch of Cashmere, and it may perhaps be interesting to annex a list of these passes which are as follows:—

1. *Baramoola* pass, open all the year round.
2. *Poonch* and *Pak'i*, joins No. 1, at Uri.
3. *Goolmery* or *Ferozepore*, open in April.
4. *Tosi Maidan*, open in May. By this pass the Sikhs invaded Cashmere in 1814, but were repulsed as shown in the sketch map.
5. *Sung-i-mysaid*, open in June, impracticable for troops.
6. *Pir Pinjal*, open for Foot 20th April. Horse 20th May.
7. *Nunden-Sir*, Do. joins No. 6, at Allahabad Serai.
8. *Selau* pass, Do. Do. more difficult by Budus, Rihurli, and Aknoor.

"them (at any rate *during the summer*;) present no insuperable barrier to the passage of light troops, even accompanied by Mountain Artillery, and we may assume that should the supposed campaign be *a winter* one, that the forces to be employed as suggested would be massed in certain previously selected subalpine points, such as Abbottabad, Murrie, Rajourie," &c., &c.

With these explanations the Chairman expressed his acquiescence in the value of the flanking position of Cashmere, and moved that the thanks of the meeting be accorded to the lecturer.

D. J. F. NEWALL, LIEUT.-COL.,

*Royal Artillery.*

MORAR, GWALIOR, 6th February 1872.

---

*Annexures to paper on the "Strategic Value of Cashmere."*

1. Sketch Map shewing the N. W. Frontier with supposed lines of flanking defence.
2. Map of part of Central Asia and "*India Alba*," showing Alexander's route towards the N. W. Frontier. B. C. 325.
3. Map of Cashmere illustrative of its military history, (with an index.)
4. Rough sketch of the N. W. Frontier posts. (page 10).

- 
9. *Koori*, near the Kosah Nag, joins No. 8, at Budue.

*By these two last named passes the Sikh Army executed a flank march on Shupecyon in 1819, whereby the position of the Doorani Governor was turned and the Valley captured by Runjeet Singh.*

10. *Water Nareh* to Jummoo, always open.

11. *Banihal*, open in May.

- 12, 13 *Sir-i-bul*, to Kishtwar, open in June; *Miribul* open in May.

In all thirteen Southern passes, leading towards the Punjab.

## II.

## NOTE ON RANGE FINDING.

BY CAPTAIN J. CREAGH.

AN interesting series of articles is now being published in the "Engineering" journal—begun in the number dated 25th October 1872. They had by 27th December, the date of the last article I have seen, described with considerable minuteness no less than seven different Range-finders, selected from the apparently very large number which have been already produced or proposed.

The problem of measuring the distance to an inaccessible object is one which will always provoke effort in some of us towards its mastery. It is presented to us so often in the field, whether of sport or of war, that we are teased by its recurrence into grappling with it.

The subject has always, from its bearing on their professional work, been somewhat interesting to soldiers of all classes ; but the introduction, during late years, of far-ranging weapons into our own service, and into the services of our neighbours and of foreign nations generally, has endowed it now with something beyond mere interest, with practical importance.

Much of the value of the improved arms depends on a knowledge of the range within certain small limits ; and it is doubtless to that fact that we owe the numerous attempts which seem to have been recently made to produce an instrument for measuring the distance to an inaccessible object suitable to the requirements of modern arms of precision.

I have no intention of giving a resumé or abstract of the able articles mentioned. They deserve to be read in full.

Whilst shrinking from the task of boiling them down into the few paragraphs of a note for the United Service Journal of India, I have been led by their perusal to the desire of adding some little to their subject, a desire which has resulted in the following remarks on some points material in land range-finding, which are not, or at least have not yet been, touched-upon by the writer in the "Engineering."

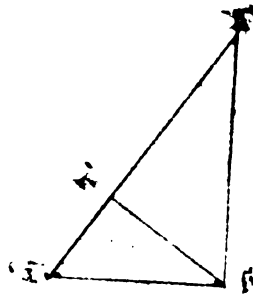
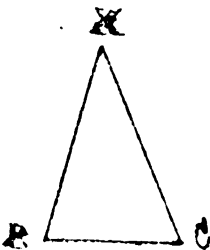
The human mind estimates a distance chiefly by making a comparison between the size of the images produced on the retina of the eye, of objects situated at the distance, and the size of the same objects at other more familiar distances.

The constancy of the exercise of the function of comparison under varying circumstances, as of change of light for instance, gives rise to an instinctive habit of estimation without sensible mental effort. The value of such estimation in the matter of accuracy in long distances is not great, but the practice of "judging distance," not many years ago introduced into the British Army, has by its results shewn that the faculty is capable of considerable cultivation and improvement.

Still at its best, as far as can now be judged, it is unequal to the demands for accuracy which our weapons of precision make upon us for the full development of their powers. We are forced to endeavour to supplement it by the use of instruments, which, like telescopes with micrometers assist the eye and the mind in performing their usual operations and calculations ; or, like the ordinary Range-finders, enable us to attain the end in view by working out the converse problem of comparing the size which objects situated at our station and whose dimensions are accurately known, or ascertained, would have when seen from the distant inaccessible one, with their apparent size at known distances.

In the course of musketry instruction a "stadium" is used, the general principle of which is that of sending on to the neighbourhood of the distant point a party of men, who mark the ends of a line of known length and direction, and then ascertaining the angle or a function of the angle which that known line subtends ; or in other words, comparing the space which the known line occupies at the unknown distance with that which it occupies at a known distance. With the new instruments called "Omnimeters," the same is done, but with all the accuracy obtainable by the use of telescopes and micrometer microscopes. In range-finding on service we cannot send any one on to the distant point ; nor can we, except on rare chance occasions, know or guess at with sufficient accuracy, the length of any line afforded by objects at or near the distant station ; stadia-omnimeters and micrometer-telescopes are therefore inapplicable.

Our instrumental operations are thus reduced to one class, namely, that in which we measure a test line or base on our accessible ground, and deduce from further measurements or observations with instruments the angle which that line will subtend at the inaccessible station, Thus :



the distance  $BX$  or  $CX$  being required, we measure  $BC$  or lay down a known length  $BC$ , very small necessarily in comparison with  $BX$  ; and we measure the angles  $B$  and  $C$  : then since  $X^\circ = 180^\circ - (B^\circ + C^\circ)$  we find at once the value of  $X^\circ$ , and place ourselves in the same position to find  $BX$  as we would have been, had  $X$  been our station of observation and  $BC$  a line sent on to the other end of the range.

The geometrical principles, if we may give them such a big name, on which the methods are based, are all mere variations of the elementary one above referred to. One variation however seems to be such a favorite with inventors that it is worth noticing specially.

If we place our test line at right angles with XB, and then from C lay down a right angle with XC towards XB produced, viz. XCD, from the two measurements BD, and BC, we obtain BX by the proportion,  $BD : BC :: BC : BX$  ; or the consequent equation  $BX = \frac{(BC)^2}{BD}$ . The many changes which can be rung on that elementary geometrical fact, changes which the nature of the instruments chosen chiefly dictate, are well exemplified in the articles of the "Engineering," to which I refer those curious in such matters.

There is then apparently but one geometrical problem to be solved in range-finding, namely, to find the value of the angle X which the base of the instrument or of the method used, subtends.

The variety of instrument and method merely comes from variety of ways, more or less suitable to the circumstances of service, of (1) making the angle measurements which the solution of the problem demands ; (2) of performing the operation of measuring a base line, and (3) of making the calculation by which from the angle found, and the base line used, the distance is deduced.

Regarding the first :

There are two classes of methods of observing an angle, namely, (1) those in which the alignments are made by direct vision ; (2) those in which they are performed by reflection. A third might be added which calls in the aid of refraction, but as the phenomena of refraction may be looked upon as modifications of those of reflection, there is no sufficient reason for disturbing the classification adopted by its introduction as the basis of a method.

All the Range-finders depend on one or other, or on a combination of those two classes of methods.

It would be possibly tedious to the ordinary reader, or indeed to any one except a would-be inventor, to wade through descriptions and analyses of the many instrumental devices used by the numerous inventors of methods and instruments, and framed with a view to suiting the operations to the circumstances under which they are to be performed ; and it is rather in illustration of the comparative value of the classes of method, than with the view of attempting to give a succinct account of each invention that the instruments will be mentioned.

The telemeter of Mr. Adie is a sample of the reflection class of instrument ; the range-finder by Captain Nolan, Royal Artillery, now being tried, and I believe giving considerable but not full satisfaction, in our service, is perhaps the best exemplar of the application of direct vision.

The second item in the task, the measurement of the base line, may also be done in two general ways, *viz.*

- (1) by actual measurement during each range operation ; as in all cases of long lines.
- (2) by using a previously measured base set up in the instrument, and not requiring any re-measurement ; all bases sufficiently short are of this kind, it being evident that great advantages in correctness and quickness are attached to it.

The two inventions above named happen to be each for each, the best possible illustrations of the two species of base-measuring. The third section of the work, the calculation, is performed either by means of a machine as in the Nolan instrument, or by the help of tables of figures as in others, or by reading off the distance on the instrument without special device beyond that of its graduation, as I think is done in Mr. Adie's telemeter.

So much for the work of finding a distance, considered in its quantity.

Let us now turn to the subject of quality. We may divide the requirements of range-finding into their essentials, thus :

1. Accuracy of result.
2. Speed in the determination of the result.
3. Serviceableness of the instruments.

The last is meant to be a very wide term, embracing simplicity and-consequent cheapness, portability, non-liability to breakage or injury, ease of repair, and all other qualities of wear necessary to an instrument destined for general use in one or more branches of an army on active service.

Accuracy is put first ; for no matter how quick-working and rough-and-ready the machine may be, if it do not give correct results it is useless. Speed and general soundness are qualities more divisible into degrees for our requirements. An accurate distance measure, though slow and delicate, might possibly be found suitable in some circumstances in land service.

Considering each of those three characters essential, failure to reach the standard that may be fixed for any one, is sufficient for our condemnation of the instrument—an absolute standard can be fixed for accuracy ; also for speed ; but for serviceability we can in discussion only use a comparative one.

It is not known whether those standards have yet been fixed by artillerists or rifle-men, nor is it intended to suggest here any for adoption. The limit to the fineness of elevation of a gun might serve as a guide to the maximum limit of the accuracy of the distance-finder



for that gun. Thus, since (quoting from Captain Leacock's exposition of the apparatus designed by Captain Nolan, R. A.) "we cannot change our elevation less than one minute," and as that change is capable of giving a change of range from one of 3,000 yards, of about 4 yards, it follows that we cannot require for our present field guns an accuracy in the knowledge of the distance greater than  $\frac{1}{750}$ th of the range. We are however more concerned with the minimum limit with the least accuracy that we can do with. That will depend so much on the nature of the destructive powers of the projectiles, that even if we accepted our guns of the present to be for ever unimprovable, it would be difficult to fix any standard. But it will tend to clearness if we assume for the first of the three essentials now about to be treated of, *viz.*, accuracy, an absolute standard as a test common for all range-finders.

Since instruments at their very simplest are an encumbrance (*e. g.*, the Nolan Range-finder occupies space in the economy of a Battery, which in its absence is given to several rounds of gun ammunition), they require to possess considerable accuracy in result to give them any sufficient reason for existence. It may not be too much to expect that the average error of work of average quality in range-finding will not be over 1-100th of the distance in each range. An instrument worthy of the trouble of being carried and used, should, it is conceived, be capable of admitting the range to be found usually within 5 yards for 500, or 30 for 3,000 yards. The limit should naturally vary with the range-peculiarities of the weapon in reference to which the estimate is made. When we decide finally on our armaments, then perhaps may we fix definitely the limit. The increasing tendency of our arms to accuracy and of our tactics to long range, will perhaps help to relieve the limit here adopted from the charge of being too narrow. But to those who may still deem it straiter than necessary, I would say that any other limit may be substituted for it without affecting the nature of the argument.

The errors to which we are liable may for present purposes, be classed under two heads, *viz.*:

- (1) inherent error.
- (2) accidental error.

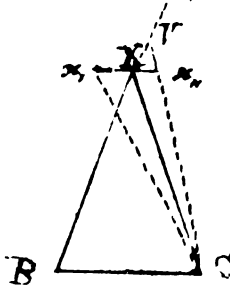
The inherent error is that which arises from the bounds which nature has set to our powers of vision.

It is a fact that we cannot see a point. The smallest surface of matter which the human eye can see, unaided, is usually stated by opticians to be one whose width, to speak somewhat roughly, subtends an angle at the eye of 30 seconds.

That being the final limit to visibility, experience has shewn that the so-called point on which alignments can be usually made when ordinary care is employed and ordinary speed is required, is a surface whose width is about 2 minutes. The circumstances of range-finding are such

that no diminution of that estimate of vision-power can be admitted. On the contrary, it is likely that sightings in range-finding on service, or in any hurry, have a wider scope of error than 2 minutes; still as the instruments may be used at times under more favorable circumstances than those mentioned, I prefer to give the arraigned range-finders the benefit of what doubt may exist, by adhering to the generally recognised limit of alignment accuracy.

When therefore we make an alignment by eye alone, in observations for a range, we are liable in spite of our ordinary care or endeavour to a small error; thus:



when at C we align on X, we may lay down the line CX1 or CX" or any line intermediate, instead of CX,  $x, x''$  being the width which subtends the limit angle, *i. e.*, 2 minutes, at the unknown distance BX or CX. The amount of the possible error in direction of each sighting is clearly 1 minute, on either side of the true line, *i. e.*, in defect or in excess of the true angle. Now, when we consider that from two to eight or twelve such sightings are required, according to the nature of the instrument, for the measurement of the two angles B and C, it will easily be conceived that the number of sightings involved will, when the bases are short, affect the accuracy-power materially. The probability of some of them being to one side, whilst the rest are on the opposite side, and therefore in some sort counterbalancing, is considerable; still calculation shews that this defect of human vision is always capable of raising serious obstacles to accuracy in the work we are now dealing with.

Before entering further on the subject, it may be well, in order to give an idea of the total error possible in cases which like the usual ones that are presented to us, are made up of several sightings besides ordinary measurements, if we ascertain the total possible amount caused by one sighting in one numerical instance. It was said that when at c we align on X, we may view  $x, Xx''$  being one minute. Now one minute at 3,000 yards gives a width of surface of about 32 inches,  $Xx''$  is therefore 32 inches, if we suppose the range to be 3000 yards. Let us further suppose ourselves working with a base of one yard long,  $Cx''$  produced goes to V on the line BX, a point such that  $BC : BV :: Xx'' : XV$  or  $(BC - Xx'') : Xx'' :: (BV - XV) : XV$ . *i. e.*,  $(36 - 32) : 32 :: 3,000 : XV$  yards, whence XV is obtained = 24,000 yards. The possible error in excess of the range, arising from this one sighting on X from C is

thus seen to be about seven times the true range. We may state the inference in a general manner thus : when the base is so small compared with the distance, that the possible inherent error in angle is greater than a very small part of the angle  $X$ , the determination is untrustworthy.

There appears to be but one way of combating this evil ; and that is to get rid of or diminish the effect caused by distance, by bringing the distant object apparently nearer to us ; a work which is done for us by the telescope. The effect of using a telescope in the alignment on  $X$  can be readily seen to be directly beneficial by reducing  $x$ ,  $x_1$ , and thus giving an approach to accuracy by admitting of our alligning on a surface more nearly akin to a point than  $x, x_1$ . Speaking roundly, a telescope of a magnifying power, linear, of 20, will reduce each error to 1-20th of that attendant on unaided vision. A microscope for reading the graduations on a limb performs an analogous office. But no conceivable application of glasses of high power and at the same time portability, could it is feared reduce the error inherent in the method of the instance just stated to satisfactory limits. We may conclude even thus early in the examination, that Range-finders of very small base, such as one yard, are to be condemned for failure in accuracy.

We may also here dwell on the value of the magnifying power of the telescope. Without it, it would be impossible to do any thing if Range-finding with bases of any but very great length. A range-finder gains directly by increase of power of the telescopes used ; and when we come to endeavour to work with a small instrumental base of a few tens of inches long, the use of the very highest-power portable telescope becomes imperative.

There is a limit even in addition to that of portability to the magnifying power of the telescope we can use. It is prescribed by the necessity of clearness.

For distinct vision under all circumstances a certain intensity of light is required.

Mr. Heather in his work on Instruments informs us :

“ That the field of view should be as bright as possible, the image of the object glass, formed by the eye-glass at the place of the eye, should not be larger than the pupil of the eye ; and the brightness will then vary directly as the square of the diameter of the object-glass, and inversely as the square of the magnifying power.”

He states that with the most improved Galilean binocular telescope a power about  $9\frac{1}{2}$  diameters is the highest practicable power attainable : and, speaking of a certain glass of that kind, that it, “ in dull or misty weather is as powerful a telescope as can be used with advantage for the observation of terrestrial objects.”

"In clear bright weather telescopes may be used having magnifying powers of from 10 to 40 diameters, the highest powers being only attainable when a large object glass is used."

"For viewing terrestrial objects in bright weather, telescopes with erect eye pieces are most advantageously used, with powers varying generally from 15 to 25 diameters. Higher powers than this are not advantageous unless the object glasses be of extra size, or the weather unusually clear and bright."

Large object glasses are very expensive.

I have compared the linear powers of several of the telescopes of ordinary instruments, such as sextant, theodolite, &c., and I make out that whilst a power of 10 in line is the usual one, that of 15 is not uncommon. Powers of 20 and upwards are only found in the high class surveying and astronomical instruments.

It has been already stated that when we say we see a point, we really see a surface whose width subtends the visual angle, 2 minutes, half of that error either in defect or in excess is liable to occur on each attempt at viewing a point. What is called an alignment is the placing the eye in such a position that two given so-called "points" appear in one and the same straight line.

Since in making such an alignment we cannot detect fault by observing that the distant "point" is not covered by the near one, until the former is visible off the line, which from its nature, can only be when it is wholly off, it follows that we have in each alignment the possibility of an error of the magnitude of the limit angle of vision.

The laying down of an angle by an instrument for direct vision, such for example as the theodolite or cross telescopes, either on the instrument, or from the instrument on to the ground or to any other instrument, consists of two alignments, one for each line enclosing the angle. The reading of an angle on the limb of the instrument also involves two alignment errors, one at the zero end, and one at the forward end. Since in range-finding with the kind of instrument in question, the angle X, which the base subtends, can only be found from, at the least, two other angles laid down and one read, we have in the necessary angle observations six alignment errors involved.

In each alignment there is the possibility of error of two minutes diminished by the use of a telescope or microscope, by being divided by the number representing the magnifying power. The following will help to shew that for instruments for direct vision at least, the statement is not over the mark.

With the telescope of a small theodolite, whose power is about 10, I look at objects at 4,200 yards distance from where I now write. Having previously measured several of the objects, I ascertain that a cross hair of the telescope covers a width of about 9 inches at the distant station; thus giving 1-5th minute nearly, as the width of instrumental

objects which I align on the distant point in measuring or laying down angles with this theodolite, and, since the telescope magnifies ten times, giving 2 minutes as the corresponding width in unaided vision.

If we assume, as perhaps we may, that up to 20 power, the reduction of actual thickness of the cross hair can only just keep pace with the increase of power of the telescope, according as that is gained by decreasing the focal length of the eye-piece, or increasing that of the object glass, we may infer that the minimum width, in the telescope, of the finest cross hair usable in range-finding telescopes, in 8-20th minute, or some quantity not very far removed from it. If such be the case, since the fineness of our alignments would be regulated rather by the thickness in the telescope, of the cross-hair than by the minimum size of object visible at the distant station, each of the sightings by higher power glasses, would be coarser than has been allowed above, when we supposed both the objects viewed in each alignment to be of the minimum width of two minutes divided by the power of the telescope.

Such a result would depreciate the value of direct-vision alignments; and it would, in some degree or other, be likely to occur so long as the telescope-width of the cross hair was greater than the telescope limit-angle of ordinary vision, represented by two minutes divided by the power of the telescope; in short, always.

Further, as in an instrument destined for usage on service, the fineness of the cross-hairs must have a speedy limit, the degree would tend to increase as the instruments were otherwise improved by the addition of power to their glasses.

Assuming now for the purpose of bringing the investigation down to the form of a tangible numerical case, that the most cross perfect telescope instrument is used one in which the reading errors are eliminated, and in which the cross-hair is sufficiently fine to cause no additional error of the kind just noticed, we are in face with four alignment errors each of a possible magnitude of two minutes divided by the power of the telescope and with the possibility of all four tending in one direction. Admitting for the telescopes, the very high magnifying power, in line, of 20, the greatest inherent error possible is 8-20th minutes; and the most likely result is that it be 4-20th minutes wrong.

Supposing for the moment that we have no other errors to deal with, we can easily deduce the shortest base that can be used under the above contingencies, in order to find the longest distance to within 1-100th of truth; for that which satisfies the longest range will naturally satisfy the shorter distances. Thus—

Since, with small angles, the angle is proportional to the base subtending it, and the distance is also proportional to the base, for the same base the angle is proportional to the distance. Therefore 4-20th minutes must be of the angle X, the same part that 1 is of 100, hence X must be 20 minutes at the least. The sine or tangent or twice the sine of half, of that angle is about 1-170th which will thus be the lowest

fraction which can represent the base divided by the distance. If 3,000 yards be our longest range,  $\frac{3000}{170}$  or 18 yards is the smallest base we can use to satisfy the assumed requirements. In other words, an instrument founded on direct-vision observation, of the nature of very high power cross-telescopes, either in perfect adjustment or so employed that the errors of its adjustment nullify one another, used with such care as to preclude the occurrence of accidental errors, and with an accurately measured base, requires, to enable us to ascertain the length of any range up to 3,000 yards to within an error on the average of 1-100th of the range, a base of not less than 18 yards.

It will be convenient now to turn to an instrument of the opposite class, namely, one founded on reflection. Between the values of the two methods of angle measuring, *viz.*, by direct vision, and by reflection, there is an essential difference when they are judged by the inherent errors. For each reflection-angle there is but one alignment of one distant object on the other. An angle found or laid down by reflection thus seems to be accompanied by half the inherent error that would be involved if direct vision were used.

Hence in laying down the base angles of the triangle of the range by using the reflecting instrument at each end of the base, as the cross telescopes were supposed used, in lieu of the four alignments allowed for, we may substitute two. The two for readings, may be allowed to be common to both methods, and to be nil as before. The limit of base will then become about 9 yards, the application of the reflecting principle admitting thus of a considerable reduction in base-length, or of a large increment to accuracy if the base be not reduced. But the descriptions of some of the short and fixed base range-finders, of which no better sample can be taken than that of Mr. Adie, allows us to see that the number of alignment errors can be again still further reduced. For it will be obvious, that if, instead of making an observation at each end of the base, we make but one altogether, and that by reflection, we have but one alignment and involve only one error in all, taking the two reading-errors at nothing as previously.

Mr. Adie's instrument for measuring distances consists of a telescope with two object glasses and their tubes, by means of which two different pencils of rays from the observed object are conducted simultaneously to the eye, and seen magnified.

The corners are turned, so to speak, by reflecting the pencils at right angles in prisms of glass placed at each end of the instrument, whose length furnishes the base of the method, and by again reflecting them after their passage from the ends to the middle of the base, towards the eye piece which occupies a central position on the base line. One of the end reflectors is movable in an arc whose centre is at the centre of the base; and the motion of displacement necessary to put its reflecting surface in position to pass the pencil of rays of the object up the tube, so that its image be seen in exact coincidence with the image of the object reflected by the fixed prism at the other end, gives

the value of the subtended angle  $X$ . Thus one pencil from  $X$  passes by



reflection at B the fixed prism, and again at A along the route  $X B A E$ . The other pencil of  $X$  is sought for by the instrumental motion of the C prism to C, when the reflecting surface becomes so presented to  $X$  that the pencil follows the route  $X C A E$ . In consequence of  $B$  and  $C$  being right angles  $C A C$  is equal to  $X$ ; and  $A C$  being of from about 1 to 3 feet fixed length, the limb  $C C$  may be graduated to yards of range in lieu of angles, giving at one reading the required distance  $B X$  or  $A X$ .

The arc  $C C$  is necessarily extremely small, but efficient means are provided for reading its minute graduations. To those who are inclined to doubt that any such minuteness can be possible in an instrument meant for the chance of rough work, one has only to point to the mid-shipman's sextant, which as far as the limb is concerned remains serviceable for the owner's life-time: in that limb the inch is divided to such fineness that its 1-7,000th part can be clearly read by the aid of the usual appliances.

We have already seen however that in instruments of very short base, even if reduced to that of one sighting, the inherent error is too much for our purposes. Still it seems clear that the fixity of the base, in so far as it admits of the observations being condensed into one, is a great gain on the side of accuracy; and, it would appear probable, that an instrument devised with a fixed base of a few yards, and for one observation by reflection, would be a much nearer approach to perfection in this matter of accuracy than has been yet made. The difficulty would be the mechanical one of rendering any instrument of a few yards in length serviceable.

It may not be uninteresting to note here the length of base, which by reason of the inherent errors alone, such an instrument would require to come up to our standard. Allowing the same telescope power as before, *viz.* 20, and supposing the reading errors nil, the greatest inherent error possible, would be 2-20th minutes; and the most likely result would be 1-20th minutes wrong; finally the base would be 5 yards in length.

Up to this last example that portion of the inherent error which attaches to the reading of the angle has been considered constant for all methods.

It is not so necessarily. The limb on which we lay down the angle to be read may be the arc of small radius attached to the instrument, or it may be some small portion of an arc of large radius, as the base length. The very same graduations and magnifying power which we have, and apply in reading on the cramped circles of instruments of the common fashion, we can have, and we can apply in reading on any sized circles we choose to employ.

The Bavarian Engineers M. M. Ernst and Carl von Paschewitz in their latest form of telemeter, have taken the whole length of their base, 25 metres, or about 27 yards, as radius of the limb on which their angles are read. Their instrument is one in which both the reflecting and the direct-vision methods are used, *viz*: a telescope furnished with cross hairs, and having a half reflector fixed at 45 degrees in front of the object glass. It is used at each end of the base, and its action is founded on the proposition mentioned at page 14, Fig. 2, a right angle being laid down at each point B and C, and a triangle B C D similar to the range---triangle B X C formed, the side B D of which being determined by telescope alignment on a target affording a good line-mark, from C the centre of the arc, is read at D at the circumference. By that arrangement, the necessity of using very fine graduations and magnifiers to read them, is avoided. Still, as it may be seen, that an error of 1-100th of an inch in B D is capable of causing an error of 1-100th of the 3,000 yards range, nothing like roughness would even here be allowable.

The cross telescope instrument of Captain Nolan's invention appears to be graduated for reading by Vernier to 45 seconds. If as is usual, we assume that half that can be read by estimation, the errors of reading alone are liable to give rise to an error of 1-60th of a long distance such as 3,000 yards.

An ordinary sextant is read by estimation to 5 seconds.

The accidental errors now claim attention. Their sources are numerous, but in practice they perhaps may be reduced to the following.

- (1) Instrumental error of the angle measurer.
- (2) Do. of the base measurer.
- (3) Personal carelessness in the angle measurements.
- (4) Do. in the base measurements.

The first is, perhaps, the most formidable of all the errors to which range-finding is liable. I speak more particularly with regard to that part of it, which attaches to the laying down of the angle on the instrument; for the error and the defects of reading the angle on the limb are within comparatively easy control. The great source is defective centering of limb.



Captain H. Clerk, R. A., F.R.S., in volume I of the R. A. Institution Proceedings gave the results of a careful examination made by him when attached to the magnetic observations, Cape of Good Hope, of the errors of a certain sextant received from the well-known makers Troughton and Simms. They varied with each angle, and ranged up to 36 seconds for one angle of  $65^\circ$ , the highest observed. In the experiments. If they continued in a proportion similar that found to hold up to  $65^\circ$ , they would at  $90^\circ$  have reached 60 seconds.

"Though it is not strictly correct to assume the error, as belonging to excentricity alone, for it no doubt is a combination of every possible error to which a sextant is liable, yet I think, that in this instance we may fairly consider that the principal cause of error is excentricity, and that all the other errors are either very small or neutralize each other."

If so much fault exist in such accurately made and carefully kept instruments, as the sextant of an observatory, how much more must we not expect to find in range measurers of Range finders!

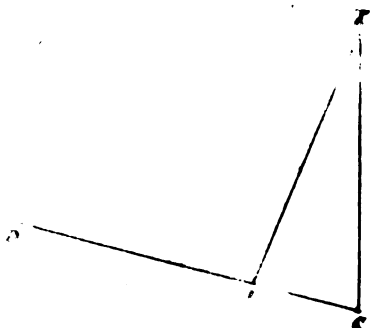
"In circular instruments where at each observation, three or five readings are taken at different parts of the arc, these errors are in a great measure eliminated."

We have in Troughton's Reflecting Circle an instance of a method of getting rid of centering error, and most of the instrumental errors in reflection-instruments.

The instrumental observation error of the angle instrument may be nullified in most instances by employing a suitable method of working. As an example; suppose a range B X (of 1,000 yards) is to be measured from B C a confined space, by sextant and tape. B C is measured, 10 yards. The angles X B C and X C B would also be measured directly by sextant at B and C, those points being probably viewed on each occasion by reflection in accordance with the usual instruction (see Handbook for Field Service) that "it is always better to hold the instrument, so as to perceive that (object) which is faintest by direct-vision, and the brightest by reflection." Each angle so measured, without careful adjustment of the position of the sextant at B and C would be unduly great on account of the parallax of the sextant. If the sextant telescope were used, and the eye placed at B and at C, the angle X would be found too small by about 30 minutes. Now since X true would be about 35 minutes, X as found by the observations would be 5 minutes; and the distance deduced would be 7,000 yards in lieu of 1,000.

The chance of such error is avoided without the necessity of devoting time or trouble to the accurate placing of the sextant index-glass in its proper position by viewing the distant object X by reflection on each occasion, and the near ones C and B by direct-vision; and further, we can get clear of all other fault of observation causable by defect in the instrument by observing with the one instrument, not the angles X B C and

$XCB$ , but the angles  $XBD$  and  $XCD$ ,  $D$  being a distant point fairly in line with  $B$  and  $C$ .



Again, if using the pocket sextant, whose graduations are to one minute only, whilst its telescope may admit of good alignment to about 1-5th of the limit of ordinary vision, or 24 seconds, we should evidently throw away the extra power given by the telescope, if we read each of the two base angles on the limb. The instrument would be best used to lay down an angle at  $C$  equal to the outward one found at  $B$ , instead of measuring and reading off one at each station; and only the difference read off on the limb; or that difference may be measured on a larger arc, or on some more closely subdivided or more accurate-recording instrument, whereby nearly all the error may be avoided.

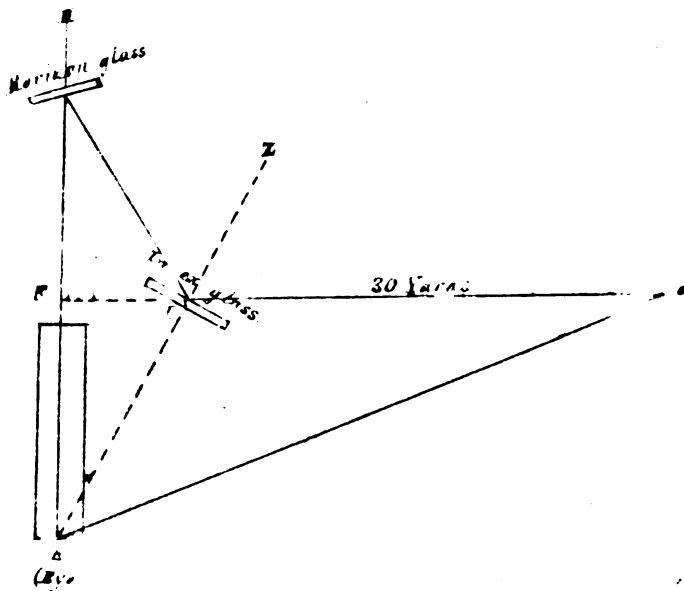
This property possessed by a pocket sextant of being used, in no matter how bad adjustment, for laying down correctly at a station, any angle observed with it at another station, is a highly valuable one, but almost totally unrecognized. That reduction to nothing of instrumental error of observation does not appear in any of the short-base telemeters; nor in the others is it always applied, being apparently thrust aside by the other demands of the work, we find it in part however in the method employed by Captain Nolan of ascertaining a distance by the use of one only of his pair of cross-telescope instruments.

On this subject it may not be out of place to mention that the usual instructions for the correction of the parallax error of sextants, which are given in our Military books of Surveying and Reconnaissance are faulty. I have several such books before me now, and in each, the words of Jackson's "Military Surveying" are repeated or re-echoed, page 109.

"To correct it" (the parallax of the sextant) "we have only to ascertain its amount by placing the index at zero, and looking through the instrument at the top of the wall" (the near object of the problem) "where if influenced by parallax, it will appear as a broken line; but by moving the index, a little way on the arc of excess or to the left of zero, the broken line will re-unite and the adjustment will be effected."

That method of correction is intended to be a practical determination of the parallax at one angle, *viz*  $0^\circ$ , and the application of that as an increment of the angle recorded on the limb.

Parallax in the sextant and similar instruments is a small error, which occurs from the eye not being in the line of the object to be reflected in the index glass, and the centre of that glass. It is of two kinds, essentially different one from the other. If the eye be supposed to mark the apex of the angle, as it is in "Jackson" (*see* pages 108 and 110) and in all the other books which copy him, then the amount of the error varies directly with the distance of the eye off that line, and inversely as the distance of the reflected object from the place of observation. The distance of the eye off the line mentioned varies for each angle under measurement by the instrument. For any one position of the eye there is a certain angle in the range of the instrument, in the measurement of which the eye is in the line, and the parallax is consequently nil. And conversely, parallax may be altogether avoided by placing the eye on each occasion at a certain point on that line, which of necessity must be the point at which it is intersected by the line of the other object and the centre of the horizon glass. For angles within the zero point of parallax in an observation with a certain instrument on an object at a certain distance off, the parallax is additive to the recorded angle; for those beyond, or greater than the angle which would give no parallax, the correction is subtractive. The error increases as the zero of the limb is approached, where its maximum on that side, the angle representable by the distance of the line of the eye, and the horizon glass from the centre of the index glass, is reached.



To exemplify the error of our books, let us suppose an object *O* 30 yards off, to be observed by reflection in a sextant used without its telescope.

The parallax found by the ordinary rule will be 5 or 6 minutes. Suppose the angle under measurement to read on the limb  $90^\circ$  OFH. We would record it as  $90^\circ. 5'$

Now the zero of parallax in this case would be about  $30^\circ$ ; and the position of the eye would be about 3 inches behind the index glass: real parallax FOE would be subtractive, and would amount to about 10 minutes; and the properly corrected angle would be  $89^\circ 50'$  OEH, the application of the rule of the books increasing much the mischief rather than diminishing it. The other kind of parallax is the error which occurs when the centre of the index-glass is supposed to mark the apex of the angle. It is constant for all angles, and with each instrument varies only with the distance of the object seen by direct vision.  $\frac{FI}{FH}$  represents it in tangent. It can evidently be altogether avoided, practically by viewing the distant object by direct vision, and the near one by reflection—the reverse of the method to be employed when the eye is placed at the station point.

The second of the sources of accidental error should be, one would think, in this age of perfect mechanical construction of no account. The compensation in measuring bars for expansion on account of increase of temperature, and a contrivance for checking or countering the stretching of tapes, would seem not to be beyond the reach of very ordinary expectation. There would, however, always remain for bases requiring quick ground measurement, some small error under this head, increasing in its proportion to the base as the latter is lengthened.

Of the two remaining errors, due to personal carelessness, only one is applicable to methods in which a fixed instrumental base is employed. Both have the inconvenient quality of being most liable of occurrence, when all the help of our instruments is most required, namely, when in a position of excitement and hurry. As such situations are rather the rule than the exception on active service, this source of error in range-finding must be admitted large. Although we cannot gauge, it we may, by making our instruments as much automatic as possible, make sure of reducing our liability considerably; a consideration which adds another to the already stated reasons of preference for a fixed instrumental base.

The estimation of the total probable effect of these accidental errors cannot be made with any pretension to accuracy. In each instrument or method, there may be found one or more peculiarities affording ground for a close comparative opinion. But for a general estimation there is no foot-hold. Since however these errors can only occur each on the making of an observation, they would with machines of equally sound construction, used in at their best, be proportional in number, on the average,

to the number of observations and operations; and since that number mainly determines the average amount of the inherent errors, the amount of the accidental errors may in default of better guidance, be taken as proportional to that amount. Thus we may safely say that the probable accidental error of an Adie telemeter in good order, for which a method of compensating the instrumental error of the angle measurer may have been found will be many times less than that of one of Captain Nolan's Range-finders, or even of one of the Bavarian instruments mentioned above, on account of all the observations being in it reduced to the alignment and one reading of a limb.

The third item of work, the calculation has been hitherto purposely kept out of consideration; because, as the necessity of submitting it to any chance of error is not very apparent, the investigation of the accuracy power of range-finders seemed likely to gain in facility by its omission.

The use of calculating machines, of which we have an instance in Captain Nolan's roller, and another in the calculator belonging to the vertical-base range-finder described in Spon's Dictionary of Engineering, is to give speed to the determination; and for methods based on a complicated form of the geometrical problem, to avoid, in addition to the delay, the chance of error in working out the numerical result in each case. It is possible that those objects may be to some extent gained; but it is at the same time impossible that their achievement can be attempted, without sacrifice of some of the accuracy for which the observer and the inventor have previously striven. There is a medium course, which the nature of each instrument can alone indicate. But, if there be any truth in the statements made above concerning the liability to error in each alignment even when made with the powerful half of high magnifiers, the extreme inconsiderateness will be apparent of making a simple calculation for which one or two sums of addition or multiplication would suffice, by an exquisitely devised mechanical arrangement, whose action involves many successive alignments by the unaided eye on a graduated limb. And the writer in the "Engineering" points out a glaring instance of the kind in the calculator used with one of the telemeters just mentioned. "But we have not much faith in calculating instruments, more especially when they involve logarithmic graduation. It would at first sight seem desirable that a distance should be found without reference to tables, or a calculation of any kind, and merely by the manipulation of an instrument, which may be performed by a person totally unacquainted with arithmetic; but in the first place, there would not seem to be any absolute necessity that persons answering the above description should be selected for working the telemeters, and in the second place, it would appear that a very simple sum worked out with tablets and a pencil, would require the expenditure of less time and trouble, and would ensure a result much more exact than could be attained by the manipulation of the most perfect calculating instrument ever constructed."

The January numbers of that Journal have come to hand since this note was begun. In them I find the description of Eckhold's omnimeter, an instrument of such wonderful promise that I would fain delay the reader to say a word about it.

It professes "to solve some very difficult problems by the application of a few simple principles, namely, the magnifying power of the telescope, the micrometer, a finely graduated scale, and a vertical base, of about three yards in length." A power of determining 1,000 yards exact to one foot is claimed for it, and though "the necessity of placing a staff at the furthest extremity of the distance to be measured, altogether precludes the application of this instrument to military purposes," still the question of how far we could apply its simple principles to a military telemeter, when as a necessity the base must be retained at the point of observation, is important.

This omnimeter works by direct observation. The power of the telescope is not stated. Since its peculiar excellence is based largely on high power let us suppose a power of 40; and as there is no demand for haste, the limit to the usual range may be taken at 1 minute. Its two inherent errors of alignment will then produce a most probable error in angle of 1-40th minutes. A claim to accuracy to 1-3,000th is made for it by its author; but the Indian Engineers who tried it only hope for 1-1,000th. Adopting the latter standard, the least angle  $X$  will be 25 minutes or 1-140th. The base being fixed at 3 yards, the greatest distance at which it can be used to get on the average within 1-1,000th of truth, will be about 420 yards. If we now make some allowance for accidental errors, for the prevention of which every effort seems to have been made in the devising, efforts which it is well to remember can, perhaps, only be feebly imitated in an instrument meant for rough service, we shall find that our estimate of the powers of this omnimeter comes close to the results obtained with it in its trial in India.

For Major G. A. Laughton, Superintendent of the Bombay Revenue Survey, is stated to have reported as follows:

"I now come to the last operation performed by this instrument, namely, that of measuring linear distances; and, I would be glad, indeed, were I able to report as favorably on this as on the others. Distances up to 1,000 feet have been taken with this instrument, but in its present state it is not to be depended upon over 600 feet, and even at this distance errors amounting to a foot are not unfrequent. The causes of error are as follows:

"The telescope not being powerful enough, and the arrangement for reading the scale being faulty. The scale itself though apparently to the naked eye, very finely divided, when under the microscope, appears exceedingly coarse, the diameter of the disc is too small, and the divisions are not sufficiently and minutely divided."

Before quitting this branch of the subject, namely accuracy, it may be of interest to remark that there exists a broad and simple principle, which hitherto seems to have been but little called in to the aid of range-finding. In the foregoing paragraphs, where the expression did not tend to mistake the limit of human vision was referred to as marked by a surface whose width is half a minute. The real limit is the surface, whose width in every direction is that quantity; in other words, the base of a cone whose apex-angle at the eye is half a minute; since the eye's power is dependent on the number of light rays, intensity being fixed, which can reach and effect it, which itself is strictly proportional to the surface turned towards the eye. The like is true of any angle, as well as of that which we call the smallest visual angle. Objects are seen in virtue of the extent of their surfaces turned towards the observer. A circular disc of one square inch surface, white on dark ground will disappear from ordinary eye-sight at about 200 yards. It will at 100 yards become so small that quick accurate alignment on it is only just possible.

If, instead of disposing the surface for view, as a circular disc, we draw it into thread or wire shape, since the operation of vision depends on the surface, we shall see the wire, provided, it do not extend in length unduly beyond the full reception-angle of the eye, up to nearly the same distance as we saw the circle.

As wires can be drawn very fine in practice, the square inch may be easily conceived to be drawn out into an object of 1-100th inch width and 100 inches length. That wire of 1-1,000th inch thickness will be nearly as visible for the purposes of alignment at 100 yards as the circular surface whose width was 100 times greater.

The general truth of the statement may be readily tested by the simple operation of viewing different measured lengths of common thread, which is about 1-50th inch wide, so as to ascertain the distance at which each length disappears from sight; or, it may be observed in viewing long stretches of telegraph wire.

That which high-power telescopes do for us in the alignments involved in angle-measuring, the same, as far as the sighting of the accessible points is concerned, can be done by the application of this principle. It is somewhat surprising then to find in the descriptions of some of the highly ingenious inventions which "Engineering" gives in its articles on Telemeters, that alignments from one end of the base to the other one made on spot-marks, and that telescopes have in consequence to be employed for those short distances of observation.

In considering the next requirement speed, we have, as for the previous one, to ask for a standard.

The *raison-d'être* of a Range-finder will be much weakened, if the time occupied in its application, approach that which the determination by a few trial shots would take. One of the apparatus under notice requires from 3 to 4 minutes, namely, the Bavarian one, in which a ground base of 25 metres is used. I understand that the Nolan instru-

ment is a quicker worker. The speed of the whole operation will depend on the celerity with which each of its parts is performed.

Of the two general methods of making the alignments for the angle-measurements required to determine the angle  $X$ , that by direct vision is quicker than by reflection, as all who have experienced the difficulty of using a sextant with its telescope fixed will admit. The circumstances of service render reflection still more faulty inasmuch as that the smoke and dust of action which retard direct vision in accurate aligning will cause still more delay in reflection alignments.

On the other hand speed is inversely proportional to the number of alignments to be made ; and since the number by reflection is less than by the other method, the latter is in that respect the inferior.

In this matter of time then, it would seem probable, that the two systems of angle-measuring give equal results. The delay in both is likely to increase, as the magnifying power of the telescopes used, is increased.

The necessity of employing trained men to make the observations is a burden which will lie more on the reflection method than on the other. But for gunnery such an objection can have but little weight, since, if a suitable instrument is found, the gunners would be trained to its use in ordinary course, just as they are trained to the working of the gun.

It is requisite to insist on reflection instruments being used on stand or rests. The place amongst the other telemeters in " *Engineering's* given to the *télé-mètre de poche* of Captain Gautier, is apt to mislead one as to its merits, not that they are not great ; but because its peculiarity of being a hand-instrument renders it all but useless for our purpose. This pocket apparatus is little different from our familiar box-sextant. It is used to lay down an angle at one end of the base equal to one laid down at the other end, parallax being eliminated and instrumental error avoided, as in the manner mentioned some pages back. The difference of angle is measured by prism-refraction, much more closely than it could be by ordinary reflection. By adopting a refractor to our pocket sextant, an equally good instrument could be produced. As far then as the difficulty of catching the reflected image and getting it exactly into its proper position, the French instrument is similar to our small sextant : it will require no shewing, for readers who are doubtless, all familiar with the latter, that the former, provided, as it is with a telescope would be extremely troublesome to use by hand with the speed and the accuracy contemplated. Either one or the other if supported on a suitable stand is capable of giving good results. But no telescope used by being held in the hand can obtain an accurate and quick measurement, and the stronger the telescope, the greater the difficulty. Since direct vision instruments must be used on rests, the necessity in their case is fairly balanced by the expediency in the other.

In the measurement of the base, advantage as to speed goes of course with small length of base, and it is at its maximum in the apparatus



of fixed pre-measured base, when however we once adopt the other style of proceeding, it becomes a question, whether the loss of speed which increase of the base to such size as will assure us of accuracy, is not well counterbalanced by that gain. It will so depend on the time standard fixed, that it is impossible to investigate it numerically, though it may be illustrated. A cross telescope apparatus of certain angle error, used for a 100 yards base, will have about three times the accuracy that it has when worked with a 40 yards base. If the employment of the former just takes us within the limit of speed allowed, it is clearly preferable to the latter. Any how it seems to be desired, that the capability of attaining greater accuracy by enlarging the base, when such is practicable, should be retained in a Range-finder. A Field Battery in its normal formation owns nearly 100 yards of frontage; it would appear, therefore, to be not the wisest arrangement to supply it with an apparatus adapted and usable only with a base of the length of some fractional part of the space most often available for its employment.

The necessity of being chary of accuracy in the base measurement and of sacrificing speed as far as possible, to its lengthening, is most urgent in methods of angle-reading like that adopted in the Bavarian machine. For there the base, as already described, serves two purposes, and entering into the calculation in the second power, is of greatly increased importance in the result. Its extension, however, might in the present form of the device entail such growth in the size of the measuring bars and targets as to impair their practical utility. Even with their present base of 27 yards, the bars must be from 22 to 44 inches long, in order to shew ranges from 500 to 3,000 yards.

In that respect the small instrumental limb, whose extension to suit any size of base, does not induce unweildiness, has a decided advantage over the large easily read detached limb.

With regard to speed in making the calculation, I feel inclined to add nothing to what has been said already in this note.

Mechanical calculators in any form may be held to be detrimental to accuracy, and to serviceability though good for speed. Hence when the other operations are slow they may be necessary in order to retrieve lost time. But there can be but little doubt that inventive genius would be better employed in quickening the method of those operations than in elaborating a calculator to compensate for the slowness permitted in them. An extract from an article of the journal already often referred to, in which the calculating roller of Captain Nolan's Range-finder is described will serve to shew how little even the most ingenious contrivance will favour accuracy.

"The differences between logarithms vary inversely with the logarithms and the numbers to which they belong, consequently the spaces between the graduations must be unequal. It will be also evident, that if we take the difference of the maximum limit of range, and that of the

next lower number on the scale, we shall have the minimum limit of the unit of graduation; the unit of graduation or the smallest space to be divided off will, therefore, in this case depend upon the degree of accuracy in measurement we propose to attain; for example, if we wish to register distances to differences of 10 yards, we find that the difference between the logarithms of 3,900 and 4,000 is .0010871, the circle with a diameter of  $\frac{1}{4}$  in. is 12.566,3706, therefore the minimum space of graduation would evidently be .012 &c., of an inch, something over one hundredth part of an inch; this would appear to be rather close for unequal graduations in wood. \*

If we increase the difference of distances to 50 yards, the minimum difference of graduation would be about .06 of an inch, and if to 100 yards, about .12 of an inch, but then we lose proportionally in accuracy of measurement as we gain in facility of graduation and practical manipulation of the instrument. With reference to the minor ranges from 400 to 1,000 we find that the log. 990 (omitting characteristic) is .9956352, the difference in this case will be simply the arithmetical complement of the above .004 &c. The differential space would therefore in this case be .05 inches, about half a tenth of an inch, giving differences of distances to 10 yards; it would appear from Fig. 31, which is copied from that in Captain Nolan's pamphlet that the graduation is to 10 yards from 100 to 1,000, and to 100 yards from 1,000 to 4,000. In the investigation of this matter we have altogether left estimation out of consideration, which with a very practised eye is, in some cases, equal to, if not superior to very minute graduation."

This note has become so long that I am forced to deal curtly with the third and last of the qualities essential in a Range finder, that of serviceableness. In its respect especially, is the examination and practical testing of each instrument proposed, necessary to the forming of a reliable opinion. In any case, however, there would have been no occasion for dwelling on the more obvious inconveniences, such as inordinate bulk or weight of the apparatus, excessive cost, flimsiness of construction, &c.

It is not uncommon to hear an instrument decried as "too delicate." Now, if there is but a grain of truth in the foregoing part of this paper, a Range-finder must be, in a certain sense, delicate. The two facts, that good telescopes are required, and that fine graduation is also necessary, sufficiently establish that, if direct vision is employed, the presence of very fine cross-hairs imposed addition delicacy as regards the telescopes.

That delicacy must be accepted. But there is another sense in which it may be taken, namely, as ease of disadjustment or disarrangement; and it is against that form of the evil that our efforts should be mainly directed.

It is difficult even to conceive of an apparatus which usage in war-service will not put out of order; or even perhaps usage in peace-service.

---

\* A wooden roller, it need hardly be observed, is totally unsuitable for service in a hot climate.

Unless we are prepared to trust much to chance on each occasion of their use, and to exchange them frequently for new or re-adjusted ones, our instruments must be of the nature of those whose method of employment admits of instrumental faults being easily ascertained or actually compensated.

Hence apparatus like the double set of cross telescopes of the Nolan Range-finder, and in a lesser degree the telescope with fixed reflector of the Bavarian Engineers, which depend on the instrumental fixity of the parts and are not employed compensatingly, cannot be serviceable Range-finders. Those only which, like the single set of cross telescopes used at each end of the base successively, whose accuracy, as far as the laying down of the angle is concerned, is exposed only to the chance of instrumental change during the short interval between the two observations at the ends of the base ; or like an apparatus suited for observation from one station and adapted for compensation by repetition or other device, can have any pretension to practical utility.

Of the many machines now brought to notice not one appears to satisfy the requirements of this essential : not one is serviceable.

It seems then that there is yet a fair field open for inventors.

The road to perfection would appear to lie in the direction of the employment of

- (1) A method in which the instrumental errors are compensated.
- (2) High powers of telescope and microscope.
- (3) Short instrumental base.
- (4) Reflection-alignment.

But instead of waiting for the guide who is to conduct us on that difficult road, we would do well, since we cannot afford to delay, to move forward by the nearest available high way. We should, dropping metaphor, whilst employing the best optical devices that can be supplied for the price we are prepared to pay, use a method in which the principle of compensating unavoidable faults has full play, and in which the largest available base can be taken.



## III.

## EUROPEAN NON-COMMISSIONED OFFICERS WITH NATIVE INFANTRY REGIMENTS.

AMONGST the numerous changes in the organization of Native Infantry regiments which were carried into effect after the mutiny of 1857, the abolition of the appointment of European Sergeant Majors and Quarter Master Sergeants, was not the least important. It is not my intention to enter into the reasons which rendered the retention of European non-commissioned officers with Native regiments undesirable, but it may be as well to state that I fully concur in the wisdom of the present arrangement and that I should view their re-appointment with regret. As however much important service was performed by Staff Sergeants of Native Infantry regiments, I have thought that a slight narrative of some of their gallant deeds might not prove unacceptable to the readers of this journal. And although I do not forget that many men of this class highly distinguished themselves in the more recent wars in this country, I purpose confining myself to an account of actions performed during the last century, when owing to the paucity of commissioned officers, European Staff Sergeants were constantly placed in the independent command of detachments of Sepoys, and in many instances under trying circumstances, honorably sustained the reputation of their country ; but in order that the position occupied by these men may be rightly understood, it will be necessary to give a brief sketch of the origin of the Native Army.

Natives of India were first enlisted by the English for military service in 1672-73, when Captain Shaxton, commanding the Company's troops at Bombay, with a view to increase the strength of the garrison filled up the two European companies with natives, so that each might consist of one hundred and thirty men ; and in 1682-84 the Court of Directors with the same object directed that two companies of Rajpoots should be embodied. From this time natives, or, as they were termed in the correspondence with England "Gentoo soldiers," were enlisted when any danger threatened Bombay, and were either disbanded or their numbers considerably reduced as soon as the alarm had subsided. These men were commanded by officers of their own caste, used their own arms, and were paid weekly half in rice and half in money, and when on duty were blended with the regular English troops.

This custom, commenced at Bombay, was subsequently adopted on the coast of Coromandel both by the English and French ; who, when engaged in hostilities either with the country powers or with each other, hired natives who brought their own arms, and continued their own manner of using them. These undisciplined troops, whether armed with swords and targets, with bows and arrows, with pikes or lances, with matchlocks or muskets, were known by the general name of Peons. The French about the year 1745 raised at Pondicherry five companies of Native soldiers, who were armed and trained in the European manner,

and were called Sepoys. The English shortly afterwards raised companies of Sepoys both at Madras and Tellicherry. Subsequently these companies were formed into battalions. The men although supplied with European arms and accoutrements still adhered to the Native dress, and were subject to very little discipline or drill.

At first there were but few European officers with each battalion, a Captain, an Adjutant with an European Sergeant for each company was the original establishment.

Previous to 1757 no establishment of Native troops was kept up in Bengal, but men called Buxarries who were nothing more than Burkundaz, armed and equipped in the usual native manner without any attempt at discipline, were entertained as required ; but after the re-capture of Calcutta and the re-establishment of the Government, Clive commenced the formation of a battalion of Sepoys, and determined to assimilate them as far as practicable to the European battalion and not only furnished the new corps with arms and accoutrements, but with clothing of the European fashion ; drilled and disciplined them as regular troops and appointed an European officer to command, and non-commissioned officers to instruct and drill them.

This system which was soon found to answer admirably was speedily imitated at the other Presidencies.

Other battalions were shortly afterwards raised in Bengal on a precisely similar footing. In the year 1760, the number of European officers having been increased, the Native battalions were placed on a more efficient footing, each battalion being allowed one Captain as Commandant, one Lieutenant and one Ensign as staff, and four European Sergeants.

On the 5th August 1765, an order was issued by Lord Clive, carrying into effect a new organization of the Bengal Army, and under this arrangement the establishment of a battalion of Sepoys was increased by two Subalterns, one Lieutenant and one Ensign, and the number of European Sergeants was fixed at three. By the same orders the Native Cavalry was formed into three troops, a Subaltern, a Sergeant Major and four Sergeants being attached to each. Some idea of the casualties amongst European soldiers in India at this period may be gathered from the fact, that although there were only twenty-one battalions of Sepoys and three troops of Native Cavalry in Bengal, requiring altogether seventy-eight Sergeants, the select Committee in a letter to the Court of Directors dated 30th September 1765, reporting the result of the recent arrangements and submitting an estimate of the number of recruits which would be required periodically to keep the European Artillery and Infantry complete, requested that twenty Sergeants might annually be sent out "for the Sepoys."

In January 1781 the Bengal Native Infantry was considerably augmented, and formed exclusive of six battalions serving in the west of India, into thirty-six regiments of two battalions composed of five companies

each. A Major Commandant was placed at the head of each regiment ; a Captain was appointed to command a battalion, and a Lieutenant to each company ; an European Sergeant Major and Quarter Master Sergeant were attached to each battalion. One of the Lieutenants was Adjutant of the regiment and a Native warrant officer Adjutant to the battalion.

From a return of the troops in the service of the East India Company in the year 1784, it appears that the number of Europeans in the three Presidencies was as follows;—2596 Artillery and 7374 Infantry exclusive of officers. In addition to these there were 56 officers of Engineers, 884 European officers with Native Infantry regiments, 50 in the Native Cavalry and 656 European non-commissioned officers attached to the Native Infantry and Cavalry regiments.

The Court of Directors in 1786 sent out instructions for an European Sergeant to be attached to each company, but this order was never carried into effect ; a third European Sergeant was however attached to each battalion as a drill Sergeant, but was struck off by the orders of Government in 1788 ; and from this year until the present organization, the number of European non-commissioned officers with a Native Infantry regiment underwent no change.

Having thus briefly sketched the rise and progress of the Infantry branch of the Native army, and detailed the various changes in the numbers of European non-commissioned officers attached to battalions, I will now proceed to narrate some of the actions in which the European Sergeants of Sepoy regiments have particularly distinguished themselves ; and it will be observed that those who were attached to battalions of the Madras army had more opportunities of earning distinction than their brethren in those of Bengal. This is to be accounted for by the fact that when the force under Clive was sent round to Bengal, on news of the capture of Calcutta by Sooruj-oo-dowlah, reaching Madras, a large proportion of officers accompanied it ; and as most of them were subsequently transferred to the Bengal Establishment, it was some years before the Madras Native Infantry battalions had a proper complement of commissioned officers attached to them. Hence it was that the Staff Sergeants of the Madras Native Army were frequently entrusted with duties, which under other circumstances would have been performed by commissioned officers.

The first special mention that I can find of European Sergeants being attached to battalions of Sepoys is in the account of the attack on Weycondah in 1753. On the 21st September of that year Major Stringer Lawrence, having defeated the French under M. Astruc at the Golden Rock, moved the same evening to lay siege to Weycondah. This fort had originally been nothing more than a pagoda and choultry, situated at the summit of a rock about thirty feet high. The rock had subsequently been enclosed by a stone wall, carried up as high as the rock itself, and made thick enough to afford a rampart about five feet in breadth, besides a slender parapet which was loop-holed. On the western front was a gateway, the top of which communicated with the ramparts on either side. The Garrison consisted chiefly of Sepoys.

At about four hundred yards from the fort there was a water course in which the English troops established themselves, and having cut embrasures through the bank, battered the walls from a battery of two eighteen pounders, and at the same time threw shells into the interior from a mortar and two cohorns. By the next evening the wall was beaten down to within twelve feet of the ground. Early the following morning some of the garrison, whilst endeavouring to make their escape through a sally port on the north side, were discovered by the English Sepoys on the right, who at once ran to prevent any more from getting out; at the same time 600 of the Sepoys who were under arms in the water course set out of their own accord without well knowing what was the matter, and ran straight to the breach; in vain their officers assured them that it was impracticable, they could not be restrained and in spite of a galling fire which was kept up by the defenders made repeated attempts to ascend it.

Baffled in their attempts to mount the breach, they ran round to the gate, which some endeavoured to force, whilst the others kept up a fire to drive the defenders from the ramparts; at last an Englishman, Sergeant to one of the companies of Sepoys, mounted on the shoulders of one of his men, and getting hold of some of the carved work of the gateway climbed to the top, and those below handing up the colors of his company, he planted them on the parapet; he was soon followed by about twenty Sepoys, and whilst some were engaged with the enemy, others got down on the inside and opened the gate, through which the remainder poured in like a torrent. Seeing this, the enemy hurried down from the ramparts, and ran up the steps to gain the choultry and pagoda at the top of the rock, but the English Sepoys followed them so closely, that before they had time to make any dispositions for defence, they were attacked at the point of the bayonet. In the first fury several were killed, but the rest, about 400, throwing down their arms and calling for quarter, were spared.

In May 1757 whilst the Madras Presidency was denuded of troops owing to the armament which had been sent round to Bengal under Clive, the French commander M. d'Anteuil, merely leaving invalids for the duties at Pondicherry; collected a force amounting to 1,000 European Infantry, 150 European Cavalry and 3000 Sepoys with some field pieces, and suddenly appeared before Trichinopoly. Captain Calliaud who was in command was away at this time, having marched out to attempt to reduce the fort of Madura by surprize. During his absence the command devolved upon Captain Joseph Smith. No sooner however did Calliaud hear of the arrival of the French within sight of Trichinopoly than he set out to return to that place, and arrived within twelve miles on the 15th May. The French had carefully guarded every approach by which he could re-enter Trichinopoly, but by a clever stratagem Calliaud managed to induce the French to believe that he intended to force his way through the middle of their line, and advanced in that direction six miles until it was quite dark, when suddenly changing his direction, he entered



some rice fields which at this season of the year were mere swamps of mud, through these the troops waded all night, the Europeans marching first and the Sepoys following, observed by the European Sergeants of their companies. At day-break, Trichinopoly was in sight ; but two miles still had to be accomplished ; Captain Smith being apprized of their approach drew out half his garrison and two field pieces, to prevent any attempt on the part of the besieging force to intercept them. No attempt however was made and Calliaud and his troops entered Trichinopoly amidst the shouts of their comrades. At sunrise a discharge of twenty-one pieces announced the exultation of the garrison to the French troops on the plain. M. d'Anteuil could scarcely credit the intelligence, but was soon convinced by some prisoners picked up by his Cavalry.

Intelligence of the march of the French army to Trichinopoly was brought to Madras on the 15th May ; and it was at once decided to create a diversion in favor of Trichinopoly by making an inroad into the enemy's country. The command of this expedition was intrusted to Colonel Adlercron. He did not leave Madras until the 26th and his movements were so slow that he did not reach Chinglapet, only thirty miles distant, until the 31st, and two days after received the welcome news that Trichinopoly had been relieved.

The Killaluar of Wandiwash having declared for the French, Colonel Adlercron was directed to employ the force under his command in an attack on that place. But waiting for re-inforcements he advanced so slowly, that he did not reach Wandiwash until the night of the 5th of June. Early the next morning he attacked the pettah which was carried after a slight resistance, but it was deemed impossible to retain it, as the principal streets led straight to the fort and were enfiladed by one or other of the towers. By this time the French were collecting troops from all quarters to march to the relief of Wandiwash ; neither the English battering guns nor any of the expected re-inforcements having reached his camp, Colonel Adlercron determined to raise the siege, but before retiring he set fire to the pettah and on the 11th arrived at Outramalore.

Just at this time news reached Madras that the French had captured the English factories in the province of Rajahmundrum, and reports were received that M. Bussy was about to attack the more important factory of Vizagapatam. Under these circumstances Colonel Adlercron was most injudiciously ordered to return with the army to Madras, although a part of the French army had arrived and encamped under the walls of Wandiwash.

The French commander M. Saubinet advanced and took possession of Outramalore as soon as it had been evacuated by the English, and directly he heard that they had passed Chinglapet on their way back to Madras, detached 200 Europeans and 500 Sepoys with two field pieces to retaliate by plundering and setting fire to Conjeveram for the burning of Wandiwash. I will quote from Orme the account of this expedition.

" Conjeveram is the largest open town in the Carnatic, and the most populous ; besides the resort it attracts by the great quantities of grain produced in the vast plain that surrounds it, it is still more frequented from the reputation of its pagoda and of the college of Bramins, who possess it, and who are acknowledged the supreme council of the Indian religion in Coromandel ; both the English and French had, during the late wars kept troops in the pagoda ; but its space and proper attentions had still preserved the priests and the holy places from contamination and pollution. There was at this time in the pagoda two companies of Sepoys, under the command of Sergeant Lambertson. The French troops arrived at noon ; and contrary to their expectation, were assailed by the fire of musketry concealed on each side of the street, which obliged them to beat up the houses as the line advanced, and the English Sepoys who knew their ground, continually escaped from one shelter to another renewing their fire until they retreated into the pagoda. The enemy exasperated advanced against the gateway, where the Sergeant was ready to receive them again, placing his Sepoys, some on scaffolding along the walls, and other amongst the open masonry of the stories which compose the vast tower over the gateway. The two field pieces were of little service to dislodge them from such defences, and the Sergeant had obstructed the porch with large trees, laid with their branches outwards. On this resistance Saubinet thought it prudent not to persist, for his time was limited, and eight of his Europeans were killed, more wounded, and of the Sepoys in proportion. They therefore marched to a distant quarter of the town, from whence detachments were sent to collect whatsoever plunder could be conveniently carried away. In the evening they set fire to the town ; at midnight they marched away and the next day arrived at Outramalore.

" The plundering and burning of Conjeveram, was but of slight importance to the terror caused by this incursion, for such was the panic, that the cultivators of the country along the Paliar abandoned their occupations to the serious detriment of the revenue. Rendered sensible at last of the error they had committed in ordering the return of the army to Madras, the Council now directed Colonel Adlercron to march back and recross the Paliar. Colonel Lawrence, who, when he had been superseded by Colonel Adlercron, had resolved never to serve under his command, now offered to join the army as a volunteer, an offer which was accepted with great good will. The English advanced from the Mount on the 19th June, and as they approached, the French retired from Outramalore to Wandiwash where they strongly intrenched themselves within half a mile of the eastern front of the fort. The English waiting for reinforcements, did not advance to Outramalore until the 29th. On the 11th July they encamped within sight of the French, whose army numbered 800 Europeans, of whom 100 were Hussars and 1500 Sepoys, whilst the English amounted to 700 Europeans and 2000 Sepoys, but no Cavalry except a few troopers to serve as scouts. The English made several ineffectual attempts to induce the French to come out of their intrenchment, and at last convinced that nothing but the certainty of victory would induce them to engage, and considering enough had been done to prove to the inhabitants of the country, that the former retreat

had not been occasioned by fear ; and further being desirous of putting an end to the expense of the campaign, the army marched away on the 26th and reached Conjeveram on the 28th, where, leaving 500 Europeans and 1500 Sepoys under Lieutenant Colonel Forde, the rest of the troops were directed to return to the garrisons from whence they had been withdrawn."

When Captain Calliaud quitted Madura on the 11th May to return to the relief of Trichinopoly, he left Lieutenant Rumbold with 60 Europeans and a detachment of Sepoys under Mahomed Issoof to conclude negotiations with the Jemadars of that place ; but, elated at the departure of Captain Calliaud, they declined to hold any communication with Lieutenant Rumbold. As soon therefore as Calliaud was convinced that the French would not return to Trichinopoly, he again marched out, taking with him all the troops that could be spared, and arrived at Madura on the 3rd July.

Having determined to attempt to breach the curtain between the western gateway and a tower one hundred yards to its left, Calliaud on the night of the 9th marched with a portion of the troops under his command to a water course, which ran at a distance of three hundred yards parallel with the walls, and constructed a battery for two eighteen pounders and four field pieces. At day-break he opened fire, and at noon, considering that the guns had made a sufficient impression, leaving only the artillery men in the battery, he advanced to the assault with 120 Europeans, a company of Africans, and 400 Sepoys. Calliaud himself led the Europeans and Mahomed Issoof the Sepoys. Although galled by a heavy fire, the troops advanced resolutely through the ditch, and into the *fausse-braye*; four of the most active scrambled up to the rampart, but immediately fell back, either dead, or mortally wounded. At this juncture, an officer having made use of some imprudent words, they were caught up by the men, and in spite of Calliaud's activity and exhortations, a general disinclination to advance was evinced by the whole of the troops, and all those who after this were induced to try and mount the breach, came speedily down again, stating that it was impossible to get up to the rampart. In the meanwhile, in addition to other annoyances the enemy threw down on to the heads of the assailants bags and earthen pots filled with powder, to which they set fire as they tossed them over the parapet. Calliaud continued the assault for half an hour longer, when finding that no commands would be obeyed and that he had suffered considerable loss, he drew off his troops. Four of his bravest Sergeants had been killed and as many wounded ; twenty other Europeans were killed or wounded, ten of the Africans and upwards of one hundred Sepoys were wounded, but few were killed, and still fewer died of their wounds.

Calliaud, who had been for some time in bad health, soon after this last repulse was taken dangerously ill, and was obliged to retire to the village of Trivalore, where he remained until the 4th August, when he was sufficiently restored to endure the fatigues of the camp. During his

illness some of the allies of the English sent contingents to join his force, and a strict blockade was maintained. At last the Jemadars of Madura being straitened for provisions, and despairing of any aid, determined to treat, and after considerable delay signed a treaty on the 8th September, by which they were to deliver up the town and to receive 170,000 Rupees, and at noon the same day this arrangement was carried into effect.

On the day that Madura was delivered over to the English, a French fleet under M. Bouvet arrived at Pondicherry, and the following day landed the troops, it had brought from France, and which consisted of the regiment of Loraine, numbering 983 of all ranks, 50 of the king's artillery, and 60 volunteers from Bourbon, the whole under the command of Marshal de Soupires. Calliaud immediately, on hearing of the arrival of the French reinforcements, returned with all the Europeans to Trichinopoly, leaving Mahomed Issoof with the Sepoys at Madura.

Early in the following year the French were still further reinforced by the arrival of a squadron under M. d'Ache, on board of which had been embarked the regiment of Lally, consisting of 1080 men, 50 of the king's artillery and a large number of officers of distinction, together with the Count de Lally, colonel of the Regiment of that name, Lieutenant General in the French army and now appointed Governor General over all the French possessions in India. The instructions prepared at Versailles for M. de Lally, directed that he should commence his operations by laying siege to Fort St. David. The fleet accordingly proceeded direct to that place, off which they anchored on the 28th April, so as to land the troops, they had brought from France as soon as those from Pondicherry should arrive to co-operate and cover their landing. M. de Lally himself immediately went to Pondicherry to proclaim his commission and give the necessary orders. He landed there at five in the afternoon, and such was his activity that before the night closed 1000 Europeans and as many Sepoys were on their march to Fort St. David, under the command of the Count d'Estaing, who had accompanied him from France.

It does not fall within the scope of this article to give a narrative of the siege of Fort St. David. It will suffice to say, that the garrison, commanded by Major Polier, a Swiss officer, who had distinguished himself on several occasions, consisted of 600 Europeans, of whom 250 were sailors and 1600 Sepoys, whilst the French numbered 2500 Europeans, exclusive of officers and the same number of Sepoys.

The siege was prosecuted with the greatest vigor, and on the 1st June the French, having obtained a complete superiority of fire, carried a trench to the foot of the glacis opposite the salient angle of a bastion, against which they began to erect a battery, and all the embrasures in the fort, which commanded this spot, having been ruined, and the guns in them either dismounted or withdrawn, and the French fleet moreover having been seen that day working again into the roads, Major Polier and Mr. Wynch the governor, thought it necessary to

call a council of war, at which it was unanimously decided that they ought to capitulate on the best terms they could, and articles were accordingly prepared. The defence however was continued through the night and until ten o'clock the next day, when a flag of truce was hoisted and Major Polier and one of the Company's agents went out to confer with the French commander; they returned at four in the afternoon with the articles altered by M. de Lally, and which it had been agreed to accept. The garrison was permitted to march with drums and colors to the foot of the glacis, where they grounded their arms, and surrendered themselves prisoners; they were then sent to Pondicherry where they were to remain until exchanged for an equal number of French prisoners. M. de Lally rejected the proposal that the fort should not be demolished, and in accordance with the instructions he had brought from France, directed all the fortifications should be razed to the ground. The loss of the English is nowhere stated. The French put their loss down at only twenty men from the fire of the place, but many more died from strokes of the sun and sickness.

The surrender of Fort St. David excited the greatest alarm and indignation at Madras. A court of enquiry was appointed, and although their report exonerated Major Polier from the charge of cowardice, it condemned his arrangements for the defence, and expressed an opinion that the place might have held out much longer, and declared the terms on which it was surrendered as shameful.

Immediately after the surrender of Fort St. David, M. d'Estaigue was sent with a force against Devi Cottah. He appeared in sight on the 4th June, on which the garrison consisting of 30 Europeans and 600 Sepoys, abandoned the place, and marched away through the Tanjore country to Trichinopoly.

The council at Madras concluding that after their recent success, the French would at once march against Fort St. George, called in the garrisons from the outlying stations and prepared for a vigorous defence.

By this time however Lally had completely exhausted his treasury, and had determined to replenish it at the expense of the King of Tanjore, who when he was besieged in 1751 by the army of Muzuffer Jung and Chunda Sahib, with the French troops, had compounded for the arrears of his tribute by giving Chunda Sahib a bond for Rs. 5,600,000. This bond had been made over to the French, and Lally now proceeded with his Army to enforce its payment.

At this juncture the king applied to the English for assistance, and Captain Calliaud was ordered to render him such aid as he could spare, and Mahomed Issooof with 2,000 sepoy having opportunely returned to Trichinopoly, Calliaud detached 500 Sepoys under their own native officers, with 10 European Artillery men and 300 Colleries, collected from the Polygars dependent upon Trichinopoly, deeming that this reinforcement would be sufficient for the present, and delaying to assist the king further until he had been able to watch his conduct. The French Army arrived within

six miles of the city of Tanjore on the morning of the 18th July, and the king at once opened negotiations with Lally, who now demanded payment of interest on the demand for Rs. 5,600,000, and on the king offering Rs. 300,000, increased his demand to one million of rupees, 600 bullocks for the carriage of artillery and stores, and 10,000 pounds weight of gunpowder. But this latter demand, as exposing the distress of the Army, the French agents wisely suppressed. Up to the end of July was spent in fruitless negotiations, but at last on the 1st August Lally losing his temper wrote a violent letter denouncing vengeance not only on the country and city of Tanjore, but threatening to send the king and his family as slaves to the Mauritius, and in the evening moved his army to within a mile and a half of the city. The expressions made use of by M. de Lally in his letter, determined the king to defend himself to the last extremity. He again solicited help from Trichinopoly, and Calliaud being convinced that he had renounced all idea of reconciliation with the French detached on the 6th August a reinforcement of 500 of his best Sepoys with two excellent Sergeants and 27 Artillerymen, who to avoid the French troops, proceeded by a round-about road along the bank of the Coleroon.

On the 2nd August the French opened fire on the walls from two batteries which they had constructed in a water course running parallel with the wall on the south side of the city, at a distance of about four hundred yards. It was not until the evening of the 7th that a breach six feet wide had been made, and by this time, there only remained one hundred and fifty rounds for the artillery and not twenty cartridges per man for the troops; notwithstanding the vast numbers of cattle which had been seized by the French Cavalry, there was not two days provision in the camp, and such was the activity of the Tanjore Cavalry, and of the Collieries, that there was no immediate hope of getting a further supply. On the morning of the 8th news was received that the French and English fleets had again been engaged, and that the latter had anchored off Kari-cal. As the wants of the army could only be supplied from that place these tidings greatly increased the anxieties of the French Commander; and despairing of succeeding in an assault of the breach he summoned a council of war. It consisted of twelve members, of whom ten voted for raising the siege, but the other two, M. Laubinet and the Count d'Estaigue were for an immediate assault. M. de Lally adopting the opinion of the majority sent off, all his sick and wounded that day, and made arrangements to retire with the army on the night of the 10th. In the meanwhile the guns in the batteries were fired every now and then to deceive the enemy.

Manackjee, the Tanjorine General, was soon apprized of the intention of the French, and imputed it to its true cause, want of

means to carry on the siege. The last detachment from Trichinopoly having arrived during the middle of the night, he proposed that it should march immediately with his own troops and attack the camp by surprize in accordance with a plan which he had formed. The men however were so much fatigued that he was obliged to postpone the attack until the morning of the 10th. No intelligence of the intended attack reached the French, who remained in negligence and security as if in the presence of an enemy they despised.

After midnight on the 9th Manackjee with 4000 Cavalry, the two detachments of Sepoys and Europeans from Trichinopoly, 5,000 of the King's Sepoys and all the Collieries, marched out of the city, and reached undiscovered the different points from which they were to make their attacks.

At dawn 50 horsemen advanced at a leisurely pace towards the French camp, and when challenged by the advanced guard said they had come to offer their services to the French General, to whom they were desirous of being conducted. Their number forbidding all idea of danger, a part of the guard accompanied them to M. de Lally's quarters, which were in a choultry half a mile to the left rear of the camp, when within a hundred yards of the choultry, the troop halted and their leader went forward towards M. de Lally, who having noticed the arrival of the horsemen had come out of the choultry and now advanced to meet their officer. Before they met, one of the horsemen, intoxicated it was believed with opium, suddenly quitted his rank and galloping up to a tumbril full of powder fired his pistol into it, blowing both himself and it up together. The explosion gave the alarm throughout the camp, and the guard at the choultry consisting of 50 men at once advanced to protect their commander. At this instant the leader of the Tanjore horse pushing towards M. de Lally made a cut at his head. M. de Lally parried it with his stick, and an African servant who attended him shot the Tanjorine dead with his pistol. The whole troop now furiously charged the guard, who received them with a steady fire, which stopped all but two or three from breaking through them; the horsemen rallied, and endeavoured to make a second charge, but in so much confusion that another volley put them to flight with such precipitation, that most of them galloped into a tank which they did not perceive in time to enable them to avoid it; but twenty-eight were left dead in the space of thirty yards. M. de Lally himself was knocked down and stunned in the scuffle, but only two of his guard were killed.

Whilst the French troops were getting under arms and expecting an attack from the quarter where the alarm had first been given, the collieries were suddenly discovered in the rear of the camp 3,000 of the Tanjore Horse now advanced against the front, and the whole body of Sepoys with the Europeans and 1,000 Horse appeared

on the right. For upwards of an hour the greatest confusion prevailed throughout the camp, but the activity and example of M. de Laubinet and the Count d'Estaigne recalled the troops to their wonted steadiness and discipline. During the confusion the English Sepoys penetrated amongst the tents, and seized three field pieces, which however they were compelled to abandon with a loss of 75 of their number killed and wounded in endeavouring to bring them away; they however succeeded in bringing off an elephant and a few camels. It is to be noticed that no European above the rank of a Sergeant took part in this attack, in which the French, whilst estimating the loss of their enemy at 400, would only admit of a loss of 10 on their own side, too small an estimate to be credible.

Directly the Tanjorines had retired the French renewed their preparations for a retreat, and having spiked and dismounted their battering guns, thrown the shot into wells and destroyed as much of their baggage as they could, they set out at midnight marching in two lines, the tumbrils and baggage being in the interval, and two field pieces were on the front, rear and on the flank of the lines. Manackjee closely followed the retreating army, and several times compelled Lally to halt and open fire from his field pieces. At noon the French halted at Covilanil, fifteen miles from Tanjore, and as there was not a pond or a stream on the road they had marched until they reached this place, nothing could now withhold the troops from breaking.

F. B. NORMAN, MAJOR,  
24th P. N. I.



## IV.

IS A RADICAL CHANGE IN THE TACTICAL FORMATION  
OF OUR INFANTRY REALLY NECESSARY?

*A lecture delivered at the Soldiers' Institute, Fort William,  
Calcutta, by*

LIEUT.-COL. AND BREVET COL. THE HON. FREDERIC THESIGER, C.B.,  
A. D. C. TO THE QUEEN,

*Local Major General, and Adjutant General in India.*

MUCH has been written since the late war between Germany and France regarding the changes which it will be necessary to make in the tactical formation of our Infantry attack, so as to make it applicable to the altered conditions of modern warfare; and it seems but too evident that the deductions which modern writers on the future tactics of the British Army too often draw from the experience of the late war are, that our two-deep line formation, so long regarded as a thoroughly British institution, must be looked upon henceforth as impracticable, and that the German skirmisher swarm formation must take its place.

Now if there be any value in the words of the author of "A Tactical Retrospect," that "to change that which has become customary and deeply rooted in an Army is always a critical matter, *but to make wholesale alteration is ruinous*," it would seem wise, before finally accepting a conclusion, which brings a revolution in its train, to pause and carefully consider the grounds on which it is based.

The following extract from one of the essays written for the Wellington prize, shows clearly the line of argument adopted to prove that the line formation is unsuited to the tactical requirements of the day—

"The aim of a tactical system should not merely be to produce flexibility, the power of conforming to the exigencies of the situation, and the irregularity of the terrain—but elasticity, the power of regaining the original shape, the primary formation.

"The line formation, as the chief feature of our drill, provides us with neither of the above requirements to any extent, but simply gives a rigidity that occasions both slow movements, and consequent longer exposure to fire, and also the utter impossibility of utilising cover, or suiting the dispositions to the ground.

"The range of fire has so much increased, that everything must give way to rapidity of advance: and while the battalion column is too large, too marked an object to attempt the forward movement without risk of annihilation, the line is so slow as to suffer almost equal loss. The deployed battalion of Infantry is just as deadly an order, if long under

fire, as the more compact columns, moving from cover to cover with quickness, and presenting but a small front to the adversary's projectiles."

Now there are no less than sixteen sections of the Field Exercise Book which describe the different methods by which a line can be made 'to conform to the exigencies of the situation, and the irregularity of the terrain, and afterwards to regain its original shape, its primary formation. They will be found under the headings :—

Formation and movements of a battalion in line.

Formation of column from line.

Formation of line from column.

Deployments.

Movements and changes of front in echelon.

A battalion in line can be sub-divided without confusion into as many parts as there are companies ; and as these companies are now not required to preserve any special numerical order, it follows that the line can be broken up and reformed with the greatest facility and without the slightest confusion.

The necessity for great flexibility and elasticity in an attack formation' having only lately been fully recognised, no real attempt has as yet been made to bring out the full powers of the line ; and the formation has been condemned, not because it does not possess these essential qualities, but because, having been allowed to lie dormant, they have been overlooked or misappreciated.

"The days no doubt are past," as says another writer of one of the Wellington prize essays, "when successively deployed stiff lines of Infantry could advance as we did at the Alma ;" but if troops in line are only handled so as to meet the requirements of the day, and so as to avoid unnecessary exposure to fire, the formation will, I believe, assert its superiority over any other in the same manner as it has always hitherto done.

The most serious charge of all which have been brought against the line, is slowness.

I am not prepared to admit however that the line, even under its present conditions, is necessarily slow ; and I am sure that any well drilled battalion without any previous practice, will be capable of advancing or retiring in that formation, in double time, for a considerable distance, without any material disarrangement taking place.

But if the advance be made by echelon of half battalions or of companies, the most rapid pace becomes perfectly feasible.

It is possible that it may be found advantageous to allow more freedom to troops advancing in line, by giving each man in the ranks 30 inches instead of 24, or by giving each company a small interval between those on its right and left: these are minor points which can easily be worked out on the drill ground.

The real question for consideration is, can troops in two-deep line formation be brought over a distance of, say 2,000 yards, under the fire of modern artillery and breech-loaders, with as little loss as would be incurred by an equal number of troops moving over the same distance in the skirmisher swarm formation.

2,000 yards appears to be the distance which most writers admit will fairly represent the space to be traversed by an attacking force under the effective fire of an enemy holding a strong position. But for the first 1,200 yards, in all probability artillery fire will alone have to be considered, as modern practice seems to condemn the system of pushing skirmishers forward in front of a defensive position. You will find at page 428 of the latest edition of Hamley's Operations of War, the following passage :

"The first question is, whether the line of skirmishers which has hitherto generally opposed the assailant's skirmishers in front of the position, is still appropriate. Before a sustained attack in force these skirmishers must, as a matter of course, be withdrawn. But to retire in face of breech-loading arms, and in presence of such a force as the skirmishing line of the assailant now comprises, would be a costly process; and the defenders' skirmishers would certainly suffer far more loss than they would inflict, while a brisk advance might bring the enemy almost to the position at their heels; when the fire of the main defensive line must, in some considerable degree, be masked by its own skirmishers."

"The first line must then be that which first opposes the enemy, and it must be carefully sheltered in order to derive due advantage from the defensive."

This view is in accordance with the experience gained in the late war. Boguslauwsky says—"Occupy in force the actual line of defence with strong bodies of skirmishers, advanced posts should only be occupied when they are particularly tenable."

At 2,000 yards a 9 pounder rifled gun, firing shell, has an error *longitudinally* of about 80 yards, and *laterally* of about eight yards. Therefore when a battery fires with a clear view of the object at 2,000 yards, the range being known precisely, and no mistake being made in the service of the guns, it is to be expected that a shot will be sometimes 40 yards short, and sometimes 40 yards beyond, or sometimes four yards to the right, or sometimes four yards to the left of the target.

The longitudinal error being therefore so much greater than the lateral error, it follows that the deeper the formation the more chance

it has of being hit; but the lateral error being so exceedingly small, a greater or less *breadth* of formation really makes no appreciable difference in the value of the target.

Viewed simply then as an object to fire at, it may be said that the two-deep line is the target which artillery would least like to have opposite to it. Of course if troops in such a formation are kept moving, the difficulty of hitting them increases enormously.

Under artillery fire alone, therefore it seems certain that troops which are kept in the formation nearest approaching a line will suffer the least loss; and consequently by dividing a regiment advancing to the attack into three lines of skirmishers, supports and reserves—the chances of casualties would seem to be actually increased.

From 800 yards up to striking point, the effectiveness of modern infantry fire has increased enormously, whereas the effectiveness of artillery at these close distances has not improved. Case fire from rifled guns ranges to a rather less distance than that from the old smooth-bore guns, and at very close distances it is about as effective.

A well aimed infantry fire is therefore more effective than the case fire of artillery, and consequently the latter cannot remain within case distance of unbroken infantry unless the battery is intended to court almost certain destruction.

Such being the opinion of one of the \*great artillery authorities of the day, *it is clearly permissible to eliminate from my calculation the effect which artillery fire is likely to produce on infantry advancing to the attack from 800 yards.* That effect is shown to be no greater than formerly, and therefore the attacking force will not be called upon to sustain any more increased strain on its enduring powers than it would have had formerly under the fire of smooth-bore artillery.

In the advance then from 800 yards the effect of infantry fire alone will be considered.

“In the field one has to deal with fire more or less well aimed, and more or less blindly delivered. It is customary to consider the first description of fire only as effective, and to look upon the last as thrown away. Both descriptions, however, fill up a certain space of ground with projectiles.”

“In peace we very properly set value only upon aimed fire, and in war, we very properly desire our soldiers to aim; but a leader should be aware, notwithstanding, that the enemy's unaimed or badly aimed fire has a great importance. The shot which misses its mark can produce effect near it. If it passes over the mark it makes the

---

\* Ruft Prince of Hohenlohe Ingelfingen Major General Commandant of the Brigade of artillery of the Prussian Guard.

ground beyond unsafe. Shot do not only produce effect on the mark aimed at, but create an unsafe region along the whole line of their course ; and unaimed shot kill and wound as well as aimed."

" In any case this fact deserves the greatest consideration, viz. that under small arm fire we have never to deal with more than 25 per cent of shot which are aimed."

The same authority\* lays down that firing is as a rule too high. It therefore follows that if only 25 per cent of the shot are aimed, (that is to say are on or about the mark,) then *nearly 75 per cent go over the mark*, and depth of formation must entail a loss which will go far to neutralise the advantage which an extended order must of course give to the attackers when under the fire of breach-loading rifles.

But from the instructions laid down it is clear that when the enemy's fire becomes really heavy it is intended that the front line of the skirmishers swarm formation should be reinforced until it contains every man in the battalion—for they say :

" The attack to commence by a general advance. If required the skirmishers would be reinforced by the supports and by the reserve of the skirmishing battalion."

Now if the front line of skirmishers (two or three companies) are found sufficient, without being reinforced, to drive the enemy from his position, it is clear that the defence must have been of such a weak nature as not to require any very special disposition to be made against it.

As however the new attack formation has been introduced, for the express purpose of neutralizing the formidable difficulties which the defence of a position by troops armed with breech-loaders is supposed to present, it may I think fairly be assumed that the reinforcement of the front line will nearly always be necessary. This view is corroborated by the experience of the late war, for Boguslawski says that, "It happened frequently that soon after the beginning of an action, a whole regiment (three battalions) fought extended into a line of skirmishers, and that often the regiment in second line, if not already directed to incline to the right or the left, was required to act as support to the first."

At the critical moment then, as far as numbers in the front line are concerned, the only difference between the reinforced line of skirmishers and the two deep line will be, that in the former every man will be out of his place, companies will be mixed up, and the difficulty of control and command over the troops under fire will be enormous, if not insurmountable; whilst in the latter all the companies will be intact and in their proper places, and the control and command precisely as usual.

---

\* The art of operating under the enemy's fire with as little loss as possible, by Major Tellenbach.

It cannot of course be denied that the two-deep line, when it approaches within easy rifle range of the enemy's position, presents a target which it ought to be easy to hit.

A direct attack however upon a determined enemy can never be made without heavy loss, whatever the formation in which it is made may be, and until it can be shown that in making such an attack, the loss incurred by troops in the skirmisher swarm formation is so much less than troops in two-deep line formation, as to entirely compensate for the mixing up, confusion and want of control which the former formation entails, I consider any such radical change in our tactical formation is clearly to be deprecated.

It is of course impossible to lay down arbitrarily any system of attack or defence, which will be applicable to all circumstances and to all kinds of ground.

I submit however for consideration the following form of attack for a single battalion, in order to show if possible that not only as a target, but also as a tactical formation, the line is superior to the skirmisher swarm.

---

In advancing under artillery fire, the line, having necessarily to adapt itself to the formation of the ground, must try as far as possible, when it has to break up its component parts, to do so in such a manner as will still only present a two-deep line as a target.

Thus, if the fire upon the line be direct, an advance in short echelon will give the requisite flexibility, and at the same time in no way offer a more favorable target. Should the fire come diagonally from one flank of the position, an advance in echelon from the opposite flank will meet the requirements of the case.

It must entirely depend upon the severity of the fire and the formation of the ground, whether the advance under artillery fire shall be general and continuous, or whether it shall be made by a succession of rushes. In the latter case each company in succession would run forward at speed to certain distance, and lie down, each forming up in line on the one which precedes it.

By this means the first 1200 yards ought to be got over without much loss.

During the last 800 yards however the advance becomes really difficult, and every possible means must now be taken to diminish the effect of the enemy's infantry fire which sooner or later must now come into play.

Rapidity of movement and a formation offering the most unfavorable target possible, are excellent precautions against infantry fire, but would not be sufficient to ensure a successful advance. Now, as formerly, skirmishers must cover the front, and upon them must devolve the

arduous duty of protecting and aiding the advance up to the moment when the final rush upon the position has to be made.

A position defended by breech-loaders is now so strong as to necessitate its being approached in a manner somewhat like that which is laid down for the escalade of a fort or for the storm of a breach. The fire of the defenders must be kept down by troops specially told off for the duty and this duty must devolve upon the skirmishers.

Skirmishers should thoroughly understand that wild, unnecessary firing is worse than useless, as it does the enemy little harm and tends to give him confidence.

A steady, well directed fire on the other hand, kept up upon every man that shows his head above the cover of the position, will nearly invariably produce its effect, and will certainly tend to lessen the value of the enemy's fire and thus facilitate the advance of the attacking force.

In order to cover the front of the line in the most rapid manner possible, and at the same time to give the line itself greater freedom of movement, I would recommend for consideration and trial that the requisite number of skirmishers should be sent out from each company, so many from each section. Their numbers must be regulated by circumstances, but the advice of Boguslawski should not be forgotten, viz. "that skirmishers sent forward should be in force from the beginning, as bringing forward reinforcements always occasions great loss."

No supports or reserves will be necessary, as the line will be close behind them, and they are not intended as an attack formation.

Skirmishers when used to cover the advance of a line, should in my opinion only take advantage of such cover as each man may find in front of him. There should be no diverging to the right or left, and every effort should be made to prevent the men getting into knots and clumps, which inevitably draw down a convergent fire. A single skirmisher lying down in the open has really less chance of being hit, than if he torn one of a group, as in the former position he does not attract any particular attention.

The manner in which skirmishers should advance is a very important consideration ; it should be carried out in such a manner as to secure a continuous fire being kept up, and also to admit of that fire being delivered by them from such a position as will offer the smallest possible mark to the enemy.

When skirmishers advance in one general line they offer the most favorable target to the enemy's fire, and they themselves have no time to fire steadily and effectively. Such a formation is therefore only suitable when the advance is made without firing, or when skirmishers are opposed to very inferior troops.

An advance by alternate files is not much better than a general line, and under fire would soon become one.

An advance by alternate sections of companies is better, but the unit is so small as to render the general control of the skirmisher line very difficult : Moreover the advance of alternate sections cannot be covered by the fire of the halted sections, as the spaces between are so small as to render such an attempt dangerous ; the fire must therefore be kept up by the skirmishers of the most advanced sections, who as in a general advance, will have no time to fire steadily and effectively except by diminishing the rapidity of their advance.

The same principle which I advocate with regard to larger bodies, holds good I think for skirmishers, viz. that they should be divided into as large an unit as can be conveniently controlled.

In this view I would recommend for consideration and trial, that the skirmisher line covering a battalion should be divided into four parts, one of which should be always advancing, the next to it ready to advance, and the other covering the advance by their fire. For instance, the skirmishers being divided into four parts, numbered from the right, are lying down. The advance, followed by the Commence Firing sounds, No. 1 at once rises and doubles forward about 20 or 30 paces ; No. 2 remains lying down ; No. 3 and 4 commence firing. When No. 1 lies down ; it commences firing ; No. 2 rises and doubles forward in line with No. 1 ; No. 3 ceases firing ; No. 4 continues to fire.

No. 3 then doubles forward, whilst Nos. 1 and 2 keep up the fire, and if thought desirable, No. 4 can advance at the same time.

When the skirmisher line is thus reformed, another advance should be made in the same manner.

By this plan a continuous fire can be kept up by *halted* skirmishers on a good portion of the enemy's line, during the whole advance, whilst each man will have plenty of time to judge his distance accurately, and to deliver his fire with a steady, effective aim.

The advance of the line in rear must be regulated by the progress made by the skirmishers, and by the amount of aimed or unaimed fire to which it may be exposed. The nearer it can remain to the skirmishers however, the better.

The whole line can rush forward as a single body ; or, when the enemy's fire or the ground does not admit of this, it can be advanced as already explained, by half battalions, double companies or companies.

It is, of course, impossible to say how near, by the above method of advance, the line will be able to approach to the enemy's position. Unless, however the enemy is a very contemptible one, sooner or later the skirmishers will be unable to get on any further.



When this check occurs, the line must be brought up to the skirmishers, who will thus fall again into the ranks of their respective companies; a general fire will be opened by the line from a lying down or kneeling position, and preparations for the last rush on the enemy will have to be made.

A charge in line, over a distance of even 100 yards upon a position stoutly defended by troops armed with breech-loaders, may almost be pronounced impracticable, unless efficient means are taken to keep down the enemy's fire, or at least to diminish its effect. It is possible of course that the charge would succeed, but the loss of life would necessarily be very great.

The problem therefore to be solved is how to cover the final rush by an effective fire.

This important duty should I think devolve upon the two flank companies of the battalion.

Whilst the fire of the line is kept up, they should be moved out diagonally to the right and left front, and placed in such a position as will enable a cross and oblique fire to be brought to bear upon the enemy. The formation of these companies must depend entirely upon the ground, and need not necessarily be skirmishing order.

So soon as the fire of these companies has produced an effect, the line should cease fire, and again get nearer to the position by a succession of rushes, opening fire again directly it is halted. The two covering companies, if not already far enough advanced, will take this opportunity of creeping on nearer. By this means it is hoped that the troops may be brought up to within charging distance of the enemy, when, if he still remain, recourse must be had to the bayonet.

---

An advance by a succession of rushes was successfully adopted by the Germans during the late war. Boguslawski says—"Meanwhile the German line of skirmishers was approaching the enemy by a succession of rushes. This was either done by taking advantage of cover, or else they would advance about a hundred paces at a run, throw themselves down and then run on again."

Such a modification of our line formation seems to me to grapple with the difficulties of a direct attack far more successfully than does the skirmisher swarm. It contains all the necessary characteristics of a good attack formation, *viz.*

- a Simplicity.
- b As large an unit as can be conveniently commanded.
- c Fire under good control.
- d The possibility of straggling reduced to a minimum.
- e Most unfavourable target for the enemy.

Moreover it does not require the extraordinary training laid down as necessary to ensure the success of the skirmisher swarm formation, viz. the organization and regulating of confusion ; the bringing of order out of disorder.

Hear what the author of a "Tactical Retrospect" has to say on this subject, he, who was the first to recommend the skirmisher swarm attack :—

"Confusion followed as a matter of course upon these attacks in loose order."

"This mode of fighting has an invariable result, the original depth of the order of battle, which consists of a support behind the skirmishers and a reserve behind these, is now superseded by a greater extension of the front line."

"There is not even the smallest guarantee that a company will fight together with the skirmishers, which it has itself thrown out, or that the companies of a battalion, or the battalion of a regiment, will ever come together.

"After a short time not only the advanced guard and the main body, but also a part of the weak reserve was engaged in the front line ; and the companies were all mixed up one with another in the greatest confusion. Without the slightest necessity, one company after another was hurled into the chaos of the fight ; very soon all were swallowed up in the front line, and thus all power of movement was lost." "When the Hanoverians at length attacked these weak lines with superior force, that happened which was inevitable, they were broken and their component parts driven back. No reserve was at hand, and thus any rallying was impossible."

The system, in fact, seems based on the assumption that victory is a certainty ; and I have not as yet discovered any one who has ventured to lay down how the agglomerated mass of skirmishers when defeated is to be brought off the field, with any prospect of rallying the troops again in their original formation within a reasonable time.

The following extract from the same author will show how *he* shirks this question—

"But it may be objected that such tactics will make it very difficult, after the battle, to re-assemble the troops thus mingled together, in their proper corps and divisions. First, gain your battle, that is the chief point, then it will be far easier to disentangle and collect your men into their proper places, than after it is lost."

Want of order, and consequent want of proper control ; undue extension of the front line, and the impossibility, in case of defeat, of quickly re-assembling the scattered units, are thus seen to be a few of the drawbacks of the skirmisher swarm formation.

Still more serious defects remain to be pointed out. I again quote from "A Tactical Retrospect."

"If only all soldiers, of their own accord would simply do their duty in battle, an army would be perfectly invincible, and would not require any tactical instruction whatever."

"But man has in his composition a natural desire of self-preservation—who would ever maintain that death was indifferent to him !

"The greater number of the men go bravely into the fight, because their common sense tells them that it must be so, that it would be shameful to sneak off : if they cannot do so with a good grace they make the best of a bad bargain."

There will always be some, however, he points out, who but watch the opportunity to remain behind—

"So long as the soldier knows that the eye of his officer is upon him, he instinctively feels the inspiration and willingly bows to it. But in the supreme moment in which danger and death are imminent, suddenly this accustomed link is broken, the eye of his leader is directed towards the enemy in the front, the troops hurry towards the fire; the man sees death in his front and a nice road-side ditch by his side : it is the temptation to a theft, he sneaks quietly into it, and his company is soon far away from him.

"This sneaking off in all kinds of ways is by no means a rare occurrence. It is chiefly by these kind of stragglers that such a serious melting away of many companies in battle is caused."

"The same man who, while overlooked, bears himself bravely, will fall off when left to himself."

If this statement of the case be equally applicable to British as well as to Prussian troops, and I fear that none who have been in action will attempt to deny it, then it follows that any system by which the supervision over troops under fire is diminished, must tend to lessen the chances of success.

Encouragement of straggling therefore may also be added to the other disadvantages of the skirmisher swarm formation.

The last but not the least objection which I have to bring against the skirmisher swarm formation, is the necessity (produced by the undue extension of the front line,) which is entailed upon the artillery, of firing over the head of the advancing troops almost from the very commencement of the attack. As the writer, of Essay No. IV says :—"In firing over the heads of infantry, one shell bursting short amongst the men tends more to demoralise them, than fifty shells from the enemy bursting in the same place would do. The confidence of infantry in their artillery, which it is most essential to encourage, is ruined by one or two accidents of that nature."

Firing over the heads of infantry should be the *rare exception* not the rule, and should only be permitted "when artillery has already got the range and from personal observation knows the points of the ground in the enemy's fronts, which are endangered by it. When the infantry approach those regions, the fire should at once cease."

I have thus enumerated the disadvantages which the several advocates of the skirmisher swarm formation themselves must admit that it possesses.

Even amongst the Germans there is still considerable difference of opinion as to the formation best suited for attack, and in a work only lately translated from the German by Colonel Edward Newdigate, called "Experimental Tactics of (Prussian) Infantry in the year 1872," it appears that the line formation is mentioned as preferable to the column against artillery fire; and as a very appropriate formation for troops *when stationary*: "under the enemies' fire in case the ground offers no cover!"

The following passage also occurs in "A Tactical Retrospect:"—"It must be most distinctly understood that these loose irregular formations which we have here alluded to, are not to hold good on all occasions and in all circumstances. So long as an officer believes himself to be in a position to gain the same results by keeping to the systematic forms of the service, he is quite right to do so."

In another well-known German pamphlet, entitled "On the Prussian Infantry 1869," the following passage will be found:—

"In order to attack a position defended by breech-loaders, two points must be taken into consideration; first, how to pass over the distance of from 400 to 50 paces before the enemy, without being annihilated; and secondly, how under the circumstances we may be enabled to have the troops well in hand, in close order, at the moment of the shock. The skirmisher swarm attack might perhaps answer for the first point of view, but decidedly not for the second."

Another authority on the late war, *viz.* The Duke of Wurtemberg says,—"One must however be cautious in drawing conclusions regarding the possible result of tactics in the future from what the Prussians succeeded in doing."

It is evident that the adoption of the skirmisher swarm formation was, as it were, the inspiration of the moment, forced upon the Prussians by the terrible loss which they suffered at St. Privat, when advancing according to the regulations which at that time held good. Success, one must remember, is apt to mislead, and it seems to me that superior numbers, entire disregard for loss of life and the faults of the French, had probably much more to say to the victories of the Germans than the tactical formation by which they were won.

Until however this moot point be decided, and the "individualised

method of fighting" be either authoritatively laid down for guidance or definitely rejected, it would seem well to consider how we can instruct our soldiers under our *present* system ; so that if an European war were to come upon us suddenly, we should not be utterly unprepared to meet the altered requirements of the day.

It seems to me that it would be well to draw a broad line between the mere mechanical drill of the company and battalion, as laid down in our Field Exercise book, and its practical exemplification when troops are supposed to be moving under fire.

The one should be called Drill, the other Manœuvring.

When at drill, no skirmishers should be sent out to cover the movements, this should be reserved entirely for manœuvring.

There would of course, be skirmishing drill, as well as battalion drill, but no combination of the two.

I attach myself the very greatest importance to steady drill, and consider that now more than ever it is essential not to neglect it. I cannot do better than quote in favor of this view the words of a General officer, who has been an eye-witness of the success of the Prussians in the campaigns of 1866 and 1870-71. He says :—

" Careful and accurate drill during peace is the best preparation for celerity and steadiness in war : " " more than half the movements in the best and most simplified drill book have no greater practical value than to make the men ready, perhaps to provide for a case which may arise once in a century, and to practise officers in giving words of command." " If all officers and men were equally intelligent and perfectly cool under fire, it might, perhaps, be sufficient to drill them only in such movements as would be used in the field. But they are not ; therefore careful and elaborate drill cannot be dispensed with, *and those who think that because many field movements are not, and cannot be practised, under fire, they therefore ought not to be practised in peace or on the drill ground, are in my humble opinion very much in the wrong.*"

I feel sure that the sound commonsense contained in these few lines will carry conviction home to every soldier who has thought over the matter, and who may perhaps be doubting somewhat whether so much attention to drill minutiae is really necessary.

With respect to manœuvring the same General says :—

" The German system however is well worthy of our imitation so far as general principles are concerned. To quote the words of an officer who was present in the field during the late war,—*"actual movements in the field as done by the Germans, are always as simple as possible, being guided by two commonsense rules, to get to the place where you are wanted as quickly as possible, and in the simplest manner possible."*

When a company or battalion is manœuvring, every movement should be made as if in presence of an enemy. The position of the latter should be pointed out, and if marked out by flags or by a few skirmishers, so much the better.

In the attack of the future, skirmishers must necessarily play a most important part. They should be made therefore to fully understand the purpose for which they are sent out, and the necessity of moving forward with the least possible exposure. When firing they should remember that quality not quantity produces the most effect.

Skirmishers must never be recalled in order that the line may open its fire : The latter must move up to the former. They must be accustomed to move without sound of bugle. The words of command must be conveyed along the whole line by the officers and non-commissioned officers. Troops in line when halted should at once lie down. Firing and loading should be carried out in the position entailing the least exposure to the enemy's fire and the more especially when at easy shooting distance from the enemy's position.

An advance in line against a position defended by breech-loading arms and within easy range of them, must be looked upon as almost hopeless, unless it can be covered efficiently by the fire of special parties told off to keep the enemy's fire down. The fire of the flank companies as I have already said, appears to me the best solution of this difficulty.

By some such means and by many others which will no doubt suggest themselves to commanding officers of regiments, infantry may be at once taught to move in the manner, which will ensure a minimum of loss under the fire of modern artillery and breech-loaders.

The separation of drill from manœuvring will, I feel sure, produce the most beneficial results ; and will do much to prevent the somewhat absurd situations which now too often occur when a combination of the two is attempted.

Whilst I have thus endeavoured to prove that no radical change in the tactical formation of our army is really required, I have, I trust also clearly indicated the important changes in the movement of our troops when under fire, which I consider necessary.

Those changes, however, are simple and easily understood. They are merely an extension of our present drill, and do not entail the study of an entirely new system. They appeal to the intelligence of the soldier, and are calculated to give him an increased interest in his profession ; and last but not least, they will enable us to retain, in spite of all the changes in modern warfare, that two-deep line formation for attack, which the British Army has always looked upon as peculiarly its own.

## V.

THE EDUCATION OF NATIVE OFFICERS IN THE  
INDIAN ARMY.

BY CAPTAIN D. M. STRONG,

*10th Bengal Lancers.*

IN these days of progression, a superior intelligence is required of every professional man. In times past, individual heroism, an aptitude for command, clerical fitness, and a good physique brought many men to the top of the ladder. For the machinery of regimental work in wars against barbarians, such accomplishments were then considered sufficient. Now, however, civilization rapidly increasing to unknown limits, daily makes greater and more exacting demands upon the powers of man, so that in future the uneducated can never rise, or if already risen, must eventually sink in the struggle for professional distinction. In the presence of such stern facts, it behoves every good soldier to look to his intellectual condition, and to that of those under his immediate command.

In dealing with the subject of this article, the writer finds it impossible to do more than make some general observations, as the mode of education, and the establishment of schools and colleges for natives, being in such a transitory state, prevents any definite system being considered and put into construction. The political advantages of a higher education of the native, are subjects of constant speculation, and we may safely enumerate amongst these, the downfall of superstition, the subversion of prejudice, and the realization of occidental power, and the superiority of Christianity above all other religions in the enforcement of justice and the possession of avowedly humane principles. The disadvantages are not so apparent, but to most are but dimly visible in the distant haze of conjecture. Among these may be reckoned the power of knowledge, and the knowledge of power turned against us, and which may hereafter incite the masses to rebellion or to the demand of impossible concessions.

It must be acknowledged that the majority of the native officers of our Indian Army in the matter of education rank with the lowest class of private. Many have had no instruction at all, and few can do more than sign their own names ; at most, some of them can read and write the Persian character, and if this is the case, according to the present standard, such knowledge comprises all that is meant by education. An officer holding a commission neither able to read or write, and yet able to command the respect of his subordinates, some of whom are clever accountants, and do all the writing of the regiment, is a curious anomaly, and shows the utter disregard the native mind has for intellectual attainments. It is considered no disgrace, because Rissaldar or Subadar——cannot correct the acquittance roll of his troop or company, he is generally perfectly incapable of doing so, and accordingly leaves such menial work to his squadron officer and the na-

tive writer, as if such was quite beyond his province as *Commandant of a Troop*!

It is necessary to keep up many vernacular books in a native regiment, to check the accounts, the issue of stores and ammunition, and to record the management of the several Funds; and each troop has its separate records, and yet to the officer *Commanding the Troop*, the accounts are hieroglyphics, and the books so much waste paper! This useful individual is quite content that the important details relating to the distribution and deduction of pay, and the clothing and equipment of his men, should be collected by a private, and copied into English by the Baboo. The most sacred trust of all the soldier's pay, is thus virtually ignored by him, and he stands aloof, with satisfied complacency, from one of the first duties of a troop officer. He has, we will suppose risen from the ranks after years of exemplary conduct, and having at last reached the zenith of his ambition, sits down in quiet and undisturbed command of his troop. There is nothing to worry him, he has the day to himself, while the Sahib and the pay sower manage his accounts and total up his buncle's bills. It may be fairly conjectured that a smart and intelligent man, who could supervise, correct, or keep up the vernacular records of his troop, would hold a more dignified position and be of greater use to the State, than the present ignorant stamp of native that rise to these positions of trust. It seems astonishing that there should be no standard of qualification for a commission in the native army, beyond a certain adaptability of character. There are now many veterans amongst these native officers, who in a few years will be invalided and pensioned; their places must in most instances be filled from the lower grades.

To prevent the commissioned ranks of the future being supplied with ignorant men, no time should be lost in framing rules for the examination of those desirous of competing for commissions in the native army. These examinations should be open to all approved applicants, both to outsiders and smart non-commissioned officers. A year at least from the date of the publication of the order should be allowed for the preparation of aspirants in the ranks, and no appointment in future should be confirmed until the prescribed examination was successfully passed. Every outsider, before being allowed to compete for a commission, should be required to serve six months with a regiment, and to hold a certificate from the commanding officer of his proficiency in drill and equitation, and his likelihood to prove an efficient officer. It also should be fully explained to all now in the native army, that length of service and loyalty alone cannot be considered as a claim to promotion, or as fitting men for responsible positions.

Short and simple works should be called for in the vernacular, to each of which should be attached a vocabulary containing a brief explanation of English words of command and other military forms of expression.

These should form the books in which the examinations would be



held, marks being also allowed for history, geography and arithmetic, the highest marks being awarded for a knowledge of English, because such knowledge immensely simplifies the technicalities of military subjects, and would enable an officer better than anything else to explain to his men the duties of their profession.

Squadron and wing officers might greatly benefit the service by encouraging the study of these books amongst their men, and forming classes of students to assemble under their directions for periodical examination.

Now that it is the intention of Government to appoint teachers to every native regiment, we may hope to see a more intelligent body filling the ranks of the non-commissioned grade ; at present, they are lamentably inferior to the non-commissioned officers of the English army in education, energy and comparative physique. Until that baneful word "parwarish" is no longer used to soften the commanding officer's heart at Durbar, we cannot hope to stop the rush of feeble slovenly old soldiers to the non-commissioned grade. We want the firm step and vigor of manhood, and not the tottering step of the old woman "parwarish," to give tone and swagger to our Indian troops. We can picture to ourselves a regiment commanded entirely by natives, the slackness, the leniency and the everlasting "parwarish" that would prevail ; everything in fact in direct opposition to the discipline, severity and unswerving will, which in their proper application make the military character so splendid.

Accordingly in dealing with natives we should ever be trying to stamp out the cringing and sycophantic element, and to replace it with a spirit of manly emulation ; the nearer we can cause the native character to assimilate to that of the British soldier in this respect, the more perfect will become our already renowned army of India.

Setting aside weightier considerations, how infinitely more interesting and pleasant it would be to have native officers capable of discussing the topics of the day with an intelligence little inferior to one's own, and with a knowledge of the geography and history of the world ; and when acquainting them with some great discovery of science, or the downfall of an empire, to meet with some response more encouraging to conversation than the vacant 'wah, wah' of an indifferent listener.

But until a sensible system of education teaches them that the world is not flat, and the moulvie is an anachronism, the great advantages to be anticipated from a closer intercourse with the English officer and his subordinates will remain as unattainable as they are now.



## VI.

ON THE DEVELOPMENT OF THE RESOURCES OF INDIA  
IN A MILITARY POINT OF VIEW.

BY LIEUTENANT (LOCAL CAPTAIN) J. COLQUHOUN, R. A.

*Commissary of Ordnance.*

"Independence of England appears all the more important, as in the event of an European war, it might become inconvenient to provide for the wants of India from the Home arsenals."

THE above extract, taken from the report of the Special Committee on Field Artillery Equipment for India represents the opinion of the experienced officers of the committee, and forms one of their reasons of preference for the introduction of bronze guns into the service in India, as hitherto there has been no difficulty in the manufacture of guns of this material in this country, while the introduction of any form of steel or iron gun, would have rendered India dependent, for some time at least, on the English arsenals.

Occurring as it does, in a Blue Book devoted purely to the consideration of this new artillery equipment, the sentence above quoted is not likely to find many readers ; and as it embodies such a self-evident truth, it is possible that it may be passed over, even by those whose occupations or tastes have led them to read through the report of the various experiments and tests of the new field guns for India.

It might have been so with me, but as the question of the development of the resources of India, had been in my mind previous to my reading the report of the committee, the sentence struck me, as it was the first time I had met with the idea in print. The expression of opinion given is a general one, but it seemed to me that it would be better to particularize the way in which this independence could be effected ; to take stock, so to speak, of the present means at the disposal of this country for the supply of its war material ; and in so doing to discover what was wanting to complete the efficiency of the army in India, and the best means of supplying these wants.

The manufacture of every thing connected with the supply of the army in India, will ultimately become a source of great saving to the revenue, as it would do away with all the charges now incurred for transit duties and freight. The introduction of new weapons, and all the recent improvements in the art of war, have caused of late years, a considerable and exceptional increase in this branch of expenditure, but as long as India is dependent on England for any part of her stores, a certain amount of outlay on this head is necessary.

The cost of production in this country, owing to the comparative cheapness of labour, will after a time produce a further saving to the revenue, while the establishment of the various manufactories, which I am about to propose, will all tend to the welfare of this country, by

the money being spent in it, which is now remitted to England. Of course a certain amount of primary outlay is necessary, but if it can be shewn that there is a fair prospect of a return, there will be no more difficulty in finding money for these undertakings than for the other prospectively remunerating works that have of late years been set on foot by Government. Even if looked at in the light of a commercial enterprise, they were after a trial pronounced to be a failure in the way of returning interest for the money expended. The encouragement to all the various arts and manufactures which depend so closely on one another, that it is difficult to draw an exact line of demarcation sometimes between them, will produce a general beneficial action on the internal administration of the country; all the more necessary, as in the present state of feeling (which is likely to continue unless checked), there is a growing dislike to the country, and the money which is drawn from it, is as a rule spent out of it.

If it is urged, that in the present scarcity of resources at the disposal of Government, there would be difficulty in establishing Government factories, it seems to me that if during a time of peace there is any such difficulty, in time of war, the difficulty would be considerably greater; and, under these circumstances would not be lessened, by having to make purchases at a time when prices would necessarily rise of all articles suitable for military purposes.

Another consideration, which I think deserves to be brought prominently forward, is that since the introduction of a shorter and quicker communication with England, by the completion of the Suez Canal, one is apt to forget that its benefits would suddenly be brought to a close in the case of a war with any power that possessed a navy, for however much the neutrality of the canal may be assured, its use as a means of conveying munitions of war would come to an end, during the period that the war lasted, and the alternative of sending all such stores round the Cape would be forced on us.

The present Government manufactories are for the Bengal Presidency as follows :—

1. The Cossipore Gun and Shell Foundry.
2. The Ishapore Gun Powder Agency.
4. The Dum Dum Cartridge, Fuze and Cap Manufactory.
5. The Futteghur Gun Carriage Agency and Timber Agency.
6. The Clothing Agency at Calcutta.
5. The Cawnpore Harness, Saddlery, and Accoutrement Depot.

With the exception of the first and last named manufactories, there are similar ones in the Bombay and Madras Presidencies, which supply the wants of those presidencies in the same way that the Bengal manufactories provide the articles by which they are designated.

With the exception of the Clothing Agency, all the other factories have only lately been established on a proper footing as regards machinery; in fact, most are still in a transition state, but in a short time they will be in working order, and quite capable of meeting all demands that may be made on them.

There remains to be considered, what other articles are necessary for the efficiency and well being of the army, and I will enumerate them.

1. Small Arms.
2. Materials for clothing.
3. Articles of general utility required in all the above manufacturing departments, and which are capable of being produced in the country.
4. Articles of soldiers' kits and necessities, which can also be manufactured out here.
5. Heavy rifled ordnance.

Though it comes properly under the third heading I have given, yet in importance the following proposition stands first on the list. It is evidently necessary for the economical working of all the machinery, that the above list of manufactories imply, that there should be a Government Iron Foundry in every locality, where coal and iron are found in sufficient proximity to enable them to be worked with any degree of profit. If there were no iron in India, the subject might be dropped, and the old system of importing every scrap of iron and every nail must be adhered to; but there is no doubt of the existence of both of these valuable ores, the sinews of war and commerce as they may be called; and their profitable working only depends on their being found sufficiently in proximity, to save any large outlay for the carriage of one to the spot where the other is found. Having succeeded in selecting the spots suitable for mining, and established the necessary factories, there is no reason why every variety of iron that is now sent out from the English market, should not be manufactured as well out here. The plant of these foundries need not consist of any very large or expensive machinery; a smelting and refining furnace for producing pig iron, and a Bessemer's furnace, or any similar one, for the manufacture of steel, would form the basis of each foundry, which would require further, only a set of rolling mills, and a steam hammer worked with a 20 H. P. engine, and boiler, for the conversion of the pigs into bars and rods, &c., and the factory would be in working order. A few light iron frame shops would be requisite for the protection of the above machinery. Now there is nothing in the machinery that could not be manufactured out here, either at the present Government Foundry at Cossipore, or at any of the Railway Workshops or Government Dockyards. It might, however, be preferable to procure the steam engine from Eng-

land, as an English engine would undoubtedly be superior to anything that could be turned out here at present. The same argument does not hold good with regard to the iron that is sent out. As very few of the brands that come out to India are of really good quality.

It may be interesting, as well as useful, to draw a comparison between the present state of our manufactories in India with that of the only other European nation, which holds a larger extent of possessions in Asia. I refer to the Russian occupation of Siberia, and the other portions of Northern Asia, which she has annexed either by right of conquest, or by treaty; and it will be seen that in respect to the development of the mineral wealth of the country, we are a long way behind our neighbours. The causes which led to their development, and those which have retarded our own, I shall not dwell on, preferring to enter the facts, as I find them existing in the present day.

To show what the Russians have done, and how systematically they have worked, I will quote a few passages extracted from a recent book of travels through Siberia, by J. D. Knox, an American traveller:—"I saw many sheets of the geological map of the Altai regions, which has been a long time in preparation, and will require several years to complete. Every mountain, hill, brook and valley is laid down by careful surveyors, and when the map is finished, it will be one of the finest and best in the world.

"One corps is engaged in surveying and mapping, while another explores and opens mines. When the snows are melted in the spring, and the floods have receded from the streams, the exploring parties are sent out into the mountains. Each officer has a particular valley assigned to him, and commands a well equipped body of men. He is expected to remain in the mountains until he has finished his work, or until compelled to leave by the approach of winter. The party procure meat from game, of which there is nearly always an abundant supply.

"Holes are dug at regular intervals, the rocks in and around the valley are carefully examined for traces of silver, and many specimens have been collected for the geological museums. Maps are made, shewing the locality of each hole in the valley, and the spot whence every specimen of rock is obtained. On the return of the party, its reports and specimens are delivered to the mining bureau. The ores go to the laboratory to be assayed, and the specimens of rocks are carefully sorted and examined."

"Prospecting on the Yenessi is conducted with great care and no mining enterprise is commenced without a thorough survey of the region to be developed. Holes or pits are dug at regular intervals, the exact depth and character of the upper earth being carefully noted. This involves a large expenditure of money and labour, and many fortunes have been wasted by parties whose lucky star has not been in the ascendant in their persistent yet unsuccessful search for paying ore.

"The mining district at Barnaool is presided over by a General Director of Mines and the smelting works by a Colonel, and many Engineer officers are employed there."

The above extracts refer chiefly to the mining operations in search of silver; but it will be evident that the careful way in which these operations are conducted, and the results noted, must bring to light every other kind of mineral ore that is at present hidden below the surface of the ground. The second extract I have given for the purpose of shewing that the prosecution of researches by the Russian government does not affect the development of private enterprise, of course the state of society in Siberia and India are so different, that it will be many a long year before any such undertaking can be carried on by private individuals in India, but the action of Government in undertaking and developing the mineral wealth of the country, will naturally be followed up by individual labours.

Our present topographical surveys have done half the work in accurately mapping the whole of the surface of India, and consequently the labour of the mining exploration is half done; for where the Russians use two parties, one for surveying and the other for prospecting, we should only have to make use of the latter. It would of course be a work of time, but if a correct system were introduced, under effective supervision and control, the work could be more effectively carried on than it is by the present Geological Survey of India. I do not mean to say that the present geological survey is useless; far from it, only that it requires expansion to be more useful.

There are other mines in the Ural mountains, conducted under the same method of Government supervision, where iron, copper, and gold ores are worked, the former having a well known reputation for the quality of the iron. Large quantities of shot, shell and guns are made at Ekaterinburg, where, besides the Government works, there are numerous foundries and manufactories of a private character.

"In some parts of the Ural chain some of the manufactories are of immense extent, and employ large numbers of workmen. At Nijue Tagiesk, for example, there is a population of twenty-five thousand, all engaged directly or indirectly, in the manufactures of iron."

What the Russians have done to develop their mineral resources, we ought certainly to be able to do, and must do, whenever the time may come that we may be cut off from obtaining our supplies from England. For the maintenance of our army, we want iron, copper, lead, and tin; iron for our shot, shell and guns; copper and lead for the small arm breech loading cartridges, and copper and tin for our bronze ordnance. Sulphur also, is an item which could be procured without difficulty, as it is absolutely necessary for the manufacture of gunpowder; one of the first smelting foundries that ought to be established should be for its manufacture into a suitable state for use. If in the course of the mining explorations, any profitable silver mines were discovered, the gain would

be incalculable, as the Government could then find means for the establishment of the various works I have suggested, without having recourse either to loans or taxation to raise the necessary funds, the cost of the maintenance of all mines could be reduced, as is done by the Russians by the use of convict labour.

It might be a question, too, how far the water supply at the foot of the Himalayas generally could be utilised instead of steam power, especially in Kumaon, where there is an abundant supply of iron of good quality. The objections used hitherto against any operations undertaken in comparatively inaccessible places could be overcome by the introduction of cheap railway lines, worked at a low rate of speed, for example, by the system invented by Mr. Fairlie, C. E., who only employs one large carriage with an engine working at one end on a line laid along the surface of the ground, without any expense of permanent way. Lines of this nature are absolutely necessary to act as feeders to the trunk railway systems, and their cost, compared with old fashioned permanent way systems, comparatively trifling. Sooner or later, they will be introduced, wherever it becomes necessary to open out any particular portion of the country only the establishment of a Government foundry and factory will render their adoption imperative and practicable, owing to the steel rails being made on the spot, instead of being brought out at a vast expense from England, and carried up country by rail and country carts where they would be required. The girder bridges could also be made on the spot, and put up when completed, instead of having as at present to wait several years till they were made and brought out from home.

The inapplicability of the permanent way system to the construction of lines in India, has been shewn this year, when the railway embankments thrown across the watershed of the country, have effectually dammed up the overflow of the river, and flooded the country injuriously, resulting ultimately in their own destruction, and causing a loss to the Government and the Railway companies. A surface line of rail would doubtless have been flooded for some time, but when the flood went down it would have been found uninjured, as there would have been no obstruction to resist the flow of the water. Where it may not be convenient to introduce these lines, traction engines would be useful substitutes in many places ; while in mountainous parts of the country, wire tramways, such as are already established in some parts of Ceylon, would be usefully introduced, to carry either the ores, or the finished material, to the more accessible localities of the plains.

Having established the means of supplying all the various metals in sufficient quantities to meet the demand from the various Government factories, the point to be considered, is to arrange for the conversion of the metal into "materiel" for warlike purposes.

The present Government manufactories are capable of supplying our military wants with the exceptions I have before specified ; it is there-



fore these exceptions only that I propose to consider, in the order in which I have entered them.

1st. The manufacture of small arms. European regiments and batteries coming out to India bring their arms with them, and thus provide this country with a large number of stands of arms ; still, a certain number of breech-loading weapons are necessary to be kept up as stock in the arsenals, to replace losses on service, and by fair wear and tear. These arms have to be indented for from England ; when the whole army in India is armed with breech-loaders, we shall be able to fix the annual requirements at about one tenth of the number in use ; with an army of 45,000 men, this would amount to an annual demand for 4,500 stand of arms for the European force in India.

Simultaneously with the arming of the British troops with breech-loaders, is being carried on the arming of the native troops with the new surplus Enfield rifles. Taking the native army in round numbers to be 60,000, and allowing the same proportion for wear and tear, we shall require a yearly amount of 6,000 Enfield rifles to meet these demands. But the loss of these rifles will not be recruited, like the breech-loaders by the annual importation of arms with regiments, consequently in addition to the above 6,000 arms, we must calculate the yearly average which will be required to keep these arms in an effective condition.

Supposing all the native troops were armed with rifles this year and that all the rifles were new, which they are not, a rifle is calculated to last twelve years with fair use ; consequently, at the expiration of the twelve years, we should require to have 60,000 new weapons to replace those worn out. To produce this large number of rifles in a short time, we must have the resources of Birmingham at our disposal ; but as we have not, whenever England may happen to be at war, we must gradually collect rifles for our future wants.

It would take at least four years to erect, and get into working order, a small arms factory ; consequently, we have only eight working years, to bring the stock of small arms up to the full proportion to meet the prospective requirements, under the conditions proposed in the preceding paragraph ; 60,000, divided by 8, gives 7500, the number of rifles that would be required annually to be collected for future use, and we have supposed 6,000 to be annually required to provide for contingencies. This gives a total of 13,500 which have to be provided every year, or 1125 per month.

The machinery required for the small arms factory, can be divided into two portions ; one for the wood work of the stocks, and the other for all the iron work. This again is subdivided into the machinery requisite for the barrel, and that for the locks and breech actions.

The former consists of a copying lathe, as it is termed, when a roughly shaped stock it turned down to its finished dimensions, and of a drilling and slotting machine, when all the various holes for the lock,

&c. are drilled at one time, leaving nothing to be done to the stocks but to smooth it down.

In connection with the shop, where the rifle stocks are turned out, is another where the packing cases for storing the arms are made ; this is rapidly affected by circular saws ; cutting the planks to the necessary lengths, and band saws for cutting out the fittings.

The system pursued in England at the Enfield manufactory in the present manufacture of arms, is to obtain the blocks for the steel barrels ready rolled into the correct lengths, so that only the boring and rifling shall be executed at the factory. This system works well in England, as the Birmingham manufactories have all the necessary appliances for preparing the barrels ready for boring, but in the establishment of a factory in India, we have not these resources to fall back on, so that all the steel blocks for the barrels must be prepared in the Government iron-works I have proposed.

The operation of rolling a barrel out of a block, does not require any great plant of machinery ; one set of rollers would be ample for the number of barrels to be produced daily.

The next process connected with the barrel is the boring, which is a longer and more tedious operation than any of the others. It takes about eight hours to effect. After this is done the barrel is proved by firing a heavy charge, and carefully examined to see if it has suffered from the discharge. If approved as serviceable, it is then rifled interiorly, and turned smooth exteriorly, and the barrel is then carefully gauged to see if its dimensions are perfectly correct, and that the rifling is uniform. If correct, it has then to be browned.

While the manufacture of the barrel is proceeding, the various components of the lock, the brass mountings and bayonet and ramrod for muzzle-loaders is being proceeded with, in another part of the manufactory.

There is of course more manual labour required in these operations but the manufacture is expedited as much as possible by the use of machinery for stamping out all the smaller parts, and for drilling all the pivots, holes, &c., but by means of piece labor, every workman being paid for the actual number he produces of the same components, the work is carried on as quickly as possible, at and the same time perfect uniformity is insured, as each man, having always to make the same thing naturally acquires great skilfulness in his particular branch.

The stock, barrel and lock, with the rest of the components are now handed over to a fitter, who puts them together, and the complete arm is now ready for a final examination, and for packing for issue.

The whole period of manufacture, as above summarily described, necessary to turn out a rifle is about five days ; the number that can be turned out in that time depends of course on the extent of the plant and the number of armourers employed.

All the machinery at present used in the manufacture of arms is patented in England, and if a Government factory were to be set up, it would have to be patented out here, so that there would be some additional expense in the matter of royalties to the owners of the patents; but with the Government foundry in working order, all the necessary machinery could be made out here, and thus a very large saving could be effected in the matter of the importation of English machinery, while the low rates of native labour, combined with piece work, would ultimately bring the cost of production below that of the English rifles.

Connected with this manufactory would be an establishment for procuring the half wrought walnut wood stocks from the Himalayas, and for making plantations of these trees to meet future demands. The stocks should be shaped on the spot where the timber is procurable, so as to save unnecessary expense in carriage. The first of these operations is done now, in connection with the Timber Agency.

At the small arm factory would also be manufactured all the various swords that are in use with the different branches of the service. Every one of the blades of these swords should be tested both for temper and quality, before being issued, so that a man's life should not be endangered in action by giving him a worthless weapon, which would break at the first heavy blow; nor should his strength be exhausted in having to use a heavier sword than there is any necessity for. The swords for the native cavalry could also be made at this factory, if the Government brand of steel were equal to that of which native swords are generally made.

The skill of native workmen in making arms of all kinds is well known; the only point at which a self taught artizan generally fails being the finish of the locks, but in the arsenal workshops, under proper superintendence, the work of the native does not fall far short of that of the European armours, consequently, with an establishment such as I have proposed, we might in a short time look for a weapon that could compete in excellence with the present Snider or Martini rifles, while the cost of its production would be less. The establishment of a factory on a large scale, to supply all the arms for the Army in India, might prove too large an undertaking to be set on foot all at once, but every thing must have a beginning, and if a small commencement were made, on any principle that would allow of the magnitude of the operations being increased as opportunity called for, and expedience showed to be necessary, we should have advanced one step at least towards realizing the independence of India.

## 2. Material for clothing.

Brigadier General Adye, R. A. in a recent letter on army organization, briefly states the system pursued in the home army of England, with regard to the "materiel," to be Government manufactories assisted as far as possible, by private enterprise; and that the system is found to work well, as undoubtedly it would, with the vast resources of Eng-

land ready to be made use of by Government whenever the latter finds it necessary to employ them. In this country a similar system prevails to a slight extent; everything that can be procured of sufficiently good quality from local resources for the use of the army is so procured, but hitherto, everything obtained out here, is branded with the name of "country," an epithet synonymous with inferior and worthless, which doubtless in many cases is only too true, but in others is quite wrong; as for instance in the case of iron; the quality of English iron, except of the most expensive brands, being inferior to the native iron, which is procurable in some of the markets. Again, both the supplies of hill beer, and Indian teas are appreciated by the public in India, and the latter also at home, but the British soldier, with his mind prejudiced by the epithet "country," looks down on these articles, and prefers the heavier quality of English beer, and the tea which is supposed to come from China.

No doubt objections would be raised at first, and prejudices of long standing would have to be overcome, if an attempt were made at supplying the clothing material from the resources of the country: English broad cloth has a world wide reputation, and though the shoddy trade has done much of late years to lessen it,—yet in regard to the real and not the spurious article, I think it may be allowed that England cannot be surpassed in this branch of industry, but we might produce sufficiently good cloth for our wants. At present our army in India is clothed entirely from home; given an European war, and this source of supply cut off for a time, the army out here would be reduced to ragged and soiled uniforms, which are as much a source of demoralization to a soldier (except of course when actually engaged in fighting) as any other cause which prevents a man from preserving a respectable appearance in his own and his comrades' estimation,

Clearly then, we ought to have manufactories for woollen cloth of all kinds, as required for military purposes. In establishing such manufactories, Government would not be entering into competition with the woollen manufacturer of India for as regards the particular kinds of cloth referred to, there is none, the only woollen manufacture being confined to the production of blankets fine and coarse, and of finer shawls. The coarse blankets alone are purchased both for men's bedding and blankets.

The establishment of such a factory would, by shewing what the resources of the country were, do a great deal of good as an example, which would be followed in course of time.

Any one who has had opportunities of marking the improvement in the manufacture of hides and leather work of late years, will hardly fail to assign the cause of this improvement to the establishment of the Cawnpore leather manufactory, harness and saddlery depot. Similarly, the establishment of a woollen cloth manufactory conducted by experienced men superintended by a military officer, would undoubtedly lead to good results.

The quality of woollen goods depends of course on the wool, and though the heat of India naturally reduces the length of fleece, yet all over the Himalayas, all the longer fleeced breed of sheep could be acclimatized, and it would tend very much to the improvement of these parts of India by showing the inhabitants that it would pay well to keep these flocks of wool-bearing sheep.

If I remember rightly some merino sheep were introduced by the late Colonel James, Commissioner of Peshawur, into the Hazara district, with what result I do not know ; but in all cases it is necessary to have a demand before the supply extends itself to meet it, and therefore I should not be surprised to learn that the experiment of the merino sheep had not succeeded, as there was not likely to be a demand for any superior qualities of wool among the native breeders and weavers.

Before going any further, it would be as well for us to see how much cloth of all kinds is actually required yearly for the army. On referring to the Budget Estimate for the army, we find the total number of soldiers receiving clothing, amounts to:—

|                              |         |
|------------------------------|---------|
| Europeans,                   | 40,698. |
| Natives (deducting cavalry), | 50,229. |

There are besides 5,253 medical subordinates and 19,276 artificers and followers, some of whom receive a certain amount of clothing.

Each English soldier is entitled to a tunic and a pair of trowsers yearly, and a great coat every fifth year.

Each native soldier is provided with a tunic and a pair of trowsers every second year, one of which is issued every year.

The amount of broadcloth necessary for the above suit of clothes may be taken at three yards, not taking into account the difference of material for coats and trowsers.

We find the total number of yards to be as follows, yearly :—

|                                                                         |          |
|-------------------------------------------------------------------------|----------|
| 40,698 Europeans at 3 yards                                             | 122,094  |
| 50,229 Natives at 1½                                                    | 75,343½  |
|                                                                         | <hr/>    |
| Yards                                                                   | 197,437½ |
| Add to this the quantity required for great coats<br>at 3 yards per man |          |
| 40,698 × 3 ÷ 5 =                                                        | 24,418   |
|                                                                         | <hr/>    |
| Yards                                                                   | 221,855½ |
|                                                                         | <hr/>    |

The cost of the articles of clothing purchased in England as entered in Appendix No. 5 Estimate for 1871-72—

|                                         |     |         |
|-----------------------------------------|-----|---------|
| For European Troops at the Agency       | Rs. | 228,135 |
| " " " Regimentally ...                  | "   | 152,597 |
| " Native Troops at the Agency ...       | "   | 38,958  |
| " " " Regimentally ...                  | "   | 76,825  |
| Great coats and cloaks, European Troops | "   | 3,756   |
| " " " ... ..                            | "   | 20,390  |
|                                         |     | <hr/>   |
| Rupees                                  |     | 520,661 |
|                                         |     | <hr/>   |

By the establishment of one or more factories in India, the whole of this sum of money would be spent in the country, thus affording ample occupation to a large number of workmen throughout the year.

There is no difficulty in ascertaining the amount of serge cloth that is annually expended in making cartridges, and in lining the saddles of mounted corps, though, as I have no authority for making the enquiry I have not done so. This branch of woollen manufacture is one that could easily be undertaken out here, even if the establishments of a factory for broad cloth of different kinds were not sanctioned. The expenditure in the two items I have mentioned is very considerable, consequently a very large stock of it is kept in hand in the arsenals. Were a factory in working order, producing the amount that is required for early consumption, the loss of interest on capital represented by this stock would be saved, and would be a direct gain.

The different kinds of woollen braid required for uniforms, and in the manufacture of cartridges could also be made out here with advantage.

There is hardly to the Infantry soldier a more important article of clothing than "boots." The late campaign of the Prussians in France has shown how much success in such undertakings depends on the marching powers of the troops, and this of course necessitates their being well shod.

In this country the sewing of English leather work does not last, consequently no great store of boots for the Army can be accumulated; so that the Army may be said to be as dependent on England for its boots as for its other articles of clothing; and in the event, as I have said before, of the source of supply being closed, the fighting power of the Army would be reduced for want of boots as much as its morale would be diminished by the want of uniforms.

The establishment of a boot factory is therefore essential to the well being of the Army, and unlike the introduction of a woollen cloth manufactory, it could be undertaken at once, in connection with the Cawnpore leather manufactory. The leather produced there is of good quality, both for uppers and soles; the machinery is available for stamping out the different portions where the stamps are made; all that

requires to be done is to put them together. Sewing machines are employed to a great extent at home for this purpose, and could be gradually introduced here; in the meantime native labour would be made use of. There will be no difficulty in proving the wearing powers of boots thus made, and if the result at first were not quite satisfactory, the faults complained of could be remedied.

To be able to carry on this manufacture with any degree of success, "thread hemp" is necessary. There having been no demand for any in the country except the Europe quality, no steps have been taken to manufacture this article, which however would require to be done, if it could not be procured of sufficiently good quality in the local markets; otherwise, as is often the case now, especially in the work done with sewing machines, the work has to be discontinued, owing to the local market not being able to supply the right quality of thread when the amount in store runs out. The many and various fibres in India will undoubtedly be found suitable for providing all the qualities of thread that are required.

Another article which was till lately in the hands of the Clothing Department, has been transferred to the Ordnance Department; I refer to spurs for mounted troops. The demand for these being urgent, and the supply from England not having arrived, orders were given for their manufacture at the Cawnpore Harness Depot. I have not seen any of them as yet, to be able to form an opinion as to their external appearance as compared to the English ones, but I have no doubt they will be found to be equal in every respect to those of home manufacture.

The other articles supplied by the Clothing Department for mounted troops are gloves, and bootings. Both of these could be made in the country—the former especially; with the number of herds of deer which run wild, and whose skins are of little or no value, any number of buckskin or doeskin gloves could be produced. The necessary quality of hides for bootings could be manufactured at Cawnpore.

### 3. *Article of general utility which can be manufactured out here.*

To this section properly belongs the manufacture of the mineral products of the country, but as I have already referred to the development of these resources in writing about the establishment of a Small-Arm factory, I shall not go over this ground again. When once the resources of the country are set in motion, every thing that can be manufactured out here in the way of brass and iron, &c. will be; and instead of keeping large stocks of iron screws, nails and wire, which perish from rust and damp, we shall be able to replenish a small stock from the local manufactories.

I have touched upon the supply of serge and woollen fabrics, and the manufacture of thread of every quality that may be wanted, in the last division of this paper, so that there is but little left of the articles

at present procured from England to enter in this division ; except rope, and the different varieties of canvas. A large quantity of excellent cordage is at present procured from the local market of Calcutta, consequently there is no object for Government to enter into competition with the manufacturers ; I have mentioned the subject, as there is also a large quantity of Europe rope in store, which is in no way superior to the produce of the Calcutta firms. Rope is a very perishable article, and the smaller the stock and the more often it is renewed, the greater the saving will be.

It seems odd, that the jute and hemp exported from this country, should find its way back in the shape of canvas, which is of course immeasurably superior to the canvas made in the country. The difference lies in the method of manufacture ; but with the introduction of the same machinery as is used at home a similar material could be produced out here, and in course of time at a cheaper rate. It happens occasionally that the supply of Europe canvas of any particular quality runs short, and none is available in the local market ; consequently, either a superior, more expensive quality, or a cheaper inferior one has to be used. In either case there is a direct loss to Government, which might be obviated by having a manufactory ready to supply the exact quality, when required. It happens also sometimes that the supply, both in the local market and in the arsenals, is short altogether ; and none is procurable except by waiting for its arrival from England.

All the different kinds of paints and varnishes can be manufactured out here, as also tar, pitch, and the mineral oils, &c., derivable from petroleum.

4. *Articles of soldier's necessaries which should be produced in the country.*

In the above I include all the under wearing apparel, as well as all the minor accessories of soap, blacking, &c. The establishment of woollen fabric manufactories could supply the army with flannel for shirts and white woollen socks. The present cotton manufacture should supply sheets, shirts and white clothing ; this last at present is almost entirely furnished either from English or American sources of supply, but by the employment of the existing manufacture of the country, a great impetus would be given to this trade, and in course of time, it would be able to compete with, and perhaps surpass, the imported article.

Boot blacking, pipe clay, &c., &c., are made now in the country, but the production being entirely in the hand of natives, the quality of the article produced is inferior to that made in England. By introducing the latest improvements and by directing the manufacture by English intelligence, there is no reason why the native article should not be rendered equal to that imported.



### 5. *Manufacture of Heavy Ordnance.*

I have entered this branch of manufacture last on the list, as in the present condition of India, it is the last that should be thought of. In due course however, when all the wants of the army are supplied by the country, if a demand for heavy rifled ordnance, and shot and shell should arise, the establishment of a factory for this purpose would follow for the present we must be content with the guns already in the country and our future wants in this respect, are not likely to be very great for some time to come.

The foregoing pages will I hope shew that there is a good deal to be done in India, before we can consider ourselves independent. I will summarize the establishments which I have proposed, and which I venture to think are necessary, in conjunction with those already existent, to effect this object. They are :

1st.—Iron smelting furnaces in every suitable locality.

2nd.—A small-arm factory, on sufficient scale to provide every arm for European and native troops.

3rd.—Woollen fabric manufactories, located either in or near the neighbourhood of the hills, in the most convenient localities as regards water power.

4th.—The establishment of a boot manufactory, as also one for gloves and bootings in connection with the Cawnpore leather manufactory.

5th.—A factory for canvas hemp and other threads and cordage if necessary.

6th.—Factory for mineral oils, paints, &c.

7th.—The manufacture of the minor articles of soldiers' necessaries.

I cannot profess to hope that the establishment of any of the above factories is likely to be carried out within the next twenty years or more. We have taken more than a hundred years to arrive at the present state of progress in India ; certainly the last ten years have done as much for the country as the previous ninety, in the way of preparing it, by means of increased communication, and improved education, for further development ; but still, progress, to be effective must be necessarily slow, especially in India, where Government is almost *bound* to lead the way in all large undertakings which must be considered in the light of speculations. There is no monied class out here, ready to avail itself of the opportunity of embarking in any enterprise, and money for any such object will not be available from England without either a Government guarantee, or unless Government has shewn practically, by commencing the work, what chance of success it will afford. The necessary interference of the Government of an established country in all pure matters of trade, is a great evil, as instead of furthering, it restricts the develop-

ment of manufacture, and tends to do away with individual action, besides giving a political turn to all matters with which it is connected ; but India is an exceptional country ; the spirit of the old Eastern patriarchal system, of rule is not yet obliterated, and the native mind still looks to the ruling head as the source whence all ideas should flow, and be carried into practical execution.

Under these circumstances what I would propose is, that all the establishment necessary for the maintenance of the army in India should be set on foot by Government. When, after a few years' practical working, they were proved to be more or less successful in the way of commercial enterprises, they should be put into the market, and made over to the highest bidder ; the Government agreeing to deal with its successors, provided the articles manufactured were of good quality, for all the stores they were, before the transfers manufacturing for their own use.

It may be objected that by undertaking all these manufactures out here we should exercise an injurious influence on the home trade. Whether this would or would not arise, time will shew, but I do not think this consideration ought to restrain as in doing our best to develop the resources of India, and if the accounts of the prospective diminution of coal in England be true, we shall not only be doing a good turn to the mother country by ceasing to draw away large quantities of it, both in kind, and by consumption of the articles manufactured by it, but we shall be obliged, for our own maintenance in India, to work entirely on our own resources of this mineral, and the sooner we begin, the better it will be, for both countries.

In a paper like this, it would be out of place to do more than merely refer to the social benefit that would be likely to arise from the development of the internal resources of the country, to the mass of the population. If like the Russians in the Urals, according to the extract I have quoted we had a few iron foundries, each supporting twenty-five thousand men, we should have a hold on the country that nothing would shake ; there would be occupation for all, and there would be neither time, opportunity, nor wish on the part of the natives to drive us out of India, where we are now only kept by a large force of soldiers.

I trust this good time may come, and sooner than I expect it will ; for though the present Government is as eager for the benefit of the country as it is possible to be, yet, as I have said before, progress is necessarily slow, and we must wait to reap the benefit of the crop, the seed of which can hardly yet be said to have been planted.

## VII.

ON A COMPRESSED AIR ENGINE FOR WORKING PUNKAS  
IN THE LINES OF EUROPEAN REGIMENTS IN INDIA.

BY COLONEL OSBORNE, C. B.,

*1-6th Regiment.*

THE adaptation of machinery to Punka pulling is a question that has occupied the attention of both amateur and professional mechanics for a period dating probably before the commencement of the present century, and it is somewhat singular that a problem apparently so simple has not, up to the present time, received any satisfactory solution.

It can hardly be doubted that if the Punka were a necessity of existence in England, we should, long ere this, have seen a suitable machine brought into common use, and power to work it laid on in every house like water or gas. Yet the disadvantages both in an economical and sanitary point of view of our present primitive arrangements for cooling Barracks in India have long been so notorious that it is difficult to account for the apathy which still prevails upon a matter so intimately connected with the health and comfort of European troops in this country.

In my present paper I do not profess to have solved a problem which has been too much for so many of my predecessors ; but rather, considering it in the light of recent mechanical improvements, to endeavour to indicate to others who have more leisure and opportunity to work it out, the direction in which I think we may look for an ultimate solution of the question.

There would appear to be two points which stand out prominently, as the most difficult ones to master, in devising any effective system of mechanical punka-pulling.

1. To imitate mechanically the "*pull*" and "*let go*" of the punka cooly's hand. (It would be comparatively easy to keep up the oscillations of a punka as the spring of a clock does those of its pendulum, but this would produce little or no movement of air.)

2. To distribute economically the power generated in a central position to the work it has to perform, at various points more or less distant from its source. The actual power required to work a system of punkas throughout the Lines of an European regiment is comparatively so trifling (provided it can be distributed economically) that its generation whether by steam or animal power would present little or no real difficulty. It is therefore I think to the two points above mentioned that our attention should in the first instance be directed.

The first attempt, as far as I know, to imitate the "*pull*" of the hand by mechanism was made about the year 1868 by the late Lieutenant Turnbull of the 6th Regiment; a young officer of considerable mechanical acquirements, whose system illustrated by models, attracted a good deal of attention at home, and formed the subject of a lecture at the United Service Institution, Whitehall.

It was afterwards tried in a barrack room at Roorkee, under the superintendence of the inventor; but there were certain inherent defects in the system, which practical mechanics pointed out as fatal to its success.

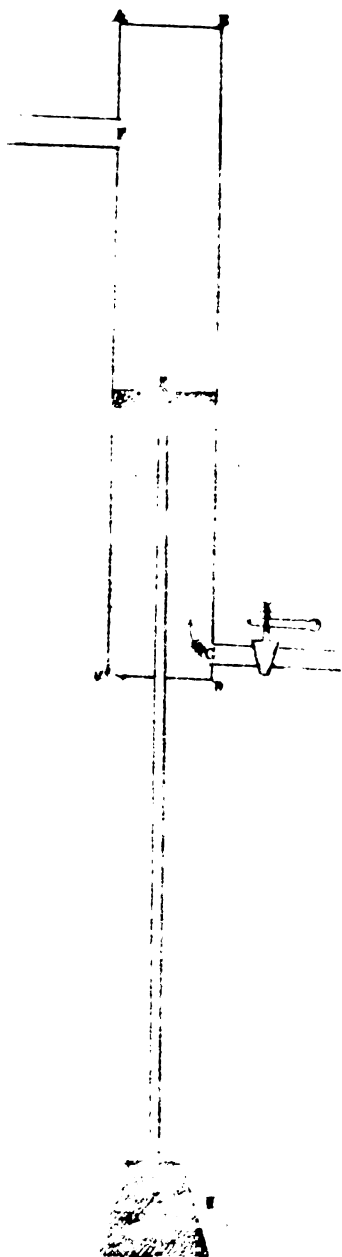
Lieutenant Turnbull connected the rope of his system of punkas to a heavy fly wheel worked by manual power. On one of the radii of this wheel, and near its circumference a heavy weight was fixed, which by its descent during half a revolution of the wheel from its highest to its lowest point, produced an acceleration of its rotation and consequently a pull or jerk upon the punkas.

It was evident however that the back swing of the punkas was retarded in nearly the same proportion that the "*pull*" was accelerated, and thus much of the useful effect of the punka was lost.

About three years ago, while examining Lieutenant Turnbull's models, it occurred to me that we had, in the principle of Nasmyth's well known steam hammer the most perfect imitation of which mechanism is capable of, the "*pull*" and "*let go*" of the punka cooly's hand.

I give a theoretical diagram in its simplest form of this well-known invention, admitted to be one of the least complicated, and at the same time most effective machines that has ever been invented.

It will be seen that it consists of nothing more than a cylinder



A B C D, piston E, and two pipes F and G ; the latter to introduce the steam (or compressed air), and the former to permit its escape into the atmosphere after it has done its work. H is the mass of iron representing the hammer in Nasmyth's machine.

If we suppose the cock K to be opened so as to let steam or compressed air underneath the piston E, it will evidently raise the latter (with the hammer attached to it) until it arrives above the orifice of the pipe F. Now, if at this moment the cock K be shut, the steam in the cylinder will escape through F and the hammer will fall by its own weight till it strikes the anvil, when the piston to which it is attached will be near the bottom of the cylinder.

In actual practise the introduction, cutting off, and escape of steam or compressed air, would of course be managed by a three-way cock or some similar self acting device, so that the machine once set in motion continues to raise and let go the hammer until the motive power is shut off.

This arrangement is, however, omitted in order to avoid complicating the diagram.

If the reader will now turn the book, so that the top of the page containing the diagram shall be at his right hand, its application to punka pulling will be at once understood.

We will suppose the cylinder fixed in the wall of a room, the hammer (H) removed, and a hook substituted in its place to which the end of the rope attached to a system of punkas is fastened.

On the admission of steam or compressed air under the piston as before, it moves to the right, giving a pull to the punkas.

When the latter arrive at the end of their swing, the steam in the cylinder is suffered to escape, and the punkas being now free to oscillate carry the piston back with them to the bottom of the cylinder.

About the commencement of the next oscillation steam is again let on to give the "*pull*," and then cut off in order to allow the punkas to swing back, and so on as long as the motive power is applied.

In practice it would, I think, be found possible to imitate even more exactly if necessary, the pull of the hand by cutting off the steam at an early part of the stroke letting it do the rest of its work by expansion. while we have it in our power to regulate with the greatest nicety the force of the pull to be given to the punkas by arranging the levers to open the cock K more or less suddenly.

This adaptation of the principle of the steam hammer seemed to me to be so exactly suited to the requirement of punka pulling, that I submitted unofficially a rough memo. on the subject to the authorities at Roorkee College in June 1870. The answer received, did not however discuss the practicability or otherwise of the principle suggested, but merely stated that the use of steam in any form was inadmissible, in so far as related to punka pulling in barracks. Being much occupied in other ways at the time, I gave the subject no further thought until last February, when visiting the Bombay Exhibition, I observed a railway carriage there which was fitted with a punka to all appearance exactly on the same principle, advocated by me three years before. I presume therefore, that the plan has had a trial and been found to work.

It must, however, be admitted that the working of this system by steam through the lines of a European regiment would be found, if not impracticable, at least very costly, owing to the radiation of heat from the immense surface of pipes that it would be necessary to employ. And this brings me to the most important part of my subject, namely, the application and distribution of power by means of compressed air.

If the problem before us, were to apply the power of a steam engine or of a system of bullock gearing to work the punkas, however numerous, in a single large building, such as a hospital, it would be a com-

paratively simple one ; but it is far otherwise when the power has to be distributed to thirty or forty buildings, some of them placed in echelon and at distances varying from 50 to 500 yards from its source.

It would not be possible, I think, in such a case to devise any system of shafting or pullies that would not absorb nearly the whole power which it was intended to transmit.

It is precisely to meet cases of this sort that Mechanical engineers have had recourse, within the last four years, to the use of compressed air as a means for the economical and effective transmission of power to a distance from its source.

The most notable instance of the use of this modern device, occurred in the tunnelling of Mont Cenis, where the power derived from a mountain torrent at the Bardonnèche end, was employed to work pumps for the purpose of compressing air into large iron reservoirs.

This air under pressure was conveyed as far as four miles from its source in iron tubes, rather under few inches in diameter, in order to work the boring machines as they cut their way through the mountain.

In the account before me, it is merely stated, that "the tubes allowed very little air to escape"—without giving any details of the amount of power lost in transmission. But at any rate we have the fact established, that an enormous power was successfully and economically transmitted by this means through a tube under four inches diameter to a point four miles from its source.

Again, at the Govan Colliery near Glasgow, an ordinary steam engine is employed at the surface for the purpose of compressing air into a reservoir, which is used to work another engine upwards of 800 yards lower down.

In this case the pressure of the compressed air at the lower engine was found to be only 1lb. per square inch below the pressure (30lbs. to the inch) at the reservoir on the surface of the ground, shewing a loss of power almost inappreciable.

A still more recent instance of the adoption of this mode of transmitting power is seen in the "Westinghouse air brake," now being introduced into most of the locomotive engines at work in America and England.

In this invention, the Engine while running compresses air into a reservoir placed under the foot-plate, whence it is conveyed by India rubber tubing to work the brakes along the train.

Although the reservoir is of the capacity of but twelve cubic feet (about the size of an arm-chest,) and the air compressed to about 60lbs. to the square inch, the power transmitted was so enormous as on one of the trials to bring to a stop in 19 seconds, a train of 14 carriages which was running at the rate of 50 miles an hour at the moment when the power was applied.

The above three instances of the application of compressed air, are all that I can refer to at present. They will however be sufficient to prove that the system for transmitting power now proposed for punka pulling has been actually tried with success on a large scale, and under far more complex conditions than that for which I venture to suggest its suitability.

It has already been stated that there would not appear to be much practical difficulty in generating the trifling power required to work the punkas in the lines of a European regiment. For this purpose the employment of one of the simple forms of steam engine now manufactured, which requires only occasional overhaul by a skilled hand, would seem to be the most suitable. These engines are worked all over England by farm laborers ; and if railway contractors find it to their advantage to use steam in nearly every part of India for pumping, working soorkie mills, &c., it is difficult to see why its use should be tabooed for working punkas. In the General Hospital at Madras I observed a few months ago, a steam engine at full work pulling the punkas of that establishment, on a system so complicated however that its use has hitherto been confined I believe to that institution.

In any case there would not appear to be any insurmountable difficulty in applying the power of bullocks through suitable gearing to work air pumps for compressing air into reservoirs.

The outline therefore of my plan stated in a few words would be as follows.

To provide at any convenient spot in the Regimental Lines a central source of power, whether steam or animal, which should be employed in compressing air into a reservoir.

From this reservoir a line of common gas piping, about 2 inches diameter, should be led along the main roads of the lines and below the surface, with smaller branch pipes (of gutta percha if necessary) leading from them to each block or building where a punka was required.

In the end walls of each of these buildings opposite the punkas a cylinder of sheet brass or copper furnished with a piston and a three-way cock with levers should be fixed in communication with the smaller branch pipes above mentioned.

No alteration whatever would need to be made in the existing punkas which, by merely unhooking the end of the rope from the piston, would be available for use in the ordinary way, in case of any derangement occurring to the engine.

There is another point incidentally connected with the employment of compressed air, which is worthy of notice. I allude to the cold which is produced by the sudden expansion of air under pressure. This is so considerable that the temperature of air expanding suddenly from a pressure of 10 lbs. to the square inch is reduced to 37° Fahrenheit, and



more than one ice-making machine has been constructed to take advantage of the principle.

There is little doubt therefore that the introduction of two or three cubic feet of cooled air from the cylinder at every oscillation of the punkas, would produce asensible effect in lowering the temperature of a barrack in the hot weather.

There now only remains the consideration of the question in its financial aspect, and I think there could hardly be a greater spur to inventors than a knowledge of the actual cost of the present wasteful and ineffecient system.

A table is appended showing the cost of the punka pulling and tattee watering establishment for one month for the Church lines at Rawul Pindee.

| Establishment. |                               | No.                                               | Rate of pay. | Amount. |      |
|----------------|-------------------------------|---------------------------------------------------|--------------|---------|------|
| Barracks       | Punkah pulling                | Mates ...                                         | 9 6          | 54      | 0 0  |
|                |                               | Coolies ...                                       | 483 5        | 2215    | 0 0  |
|                | Tattee Watering Establishment | Bullocks, pairs ...                               | 3 15         | 45      | 0 0  |
|                |                               | Bheestees Mates ...                               | 2 6          | 12      | 0 0  |
|                |                               | Bheestees Bheestees ...                           | 91 5-10      | 511     | 14 0 |
|                |                               | Mates ...                                         | 3 6          | 18      | 0 0  |
|                |                               | Coolies ...                                       | 132 5        | 660     | 0 0  |
|                |                               | For Barracks Total Rs. ...                        |              | 3515    | 14 0 |
| Hospital       | Punkah pulling                | Mates ...                                         | 1 6          | 6       | 0 0  |
|                |                               | Coolies ...                                       | 60 5         | 300     | 0 0  |
|                | Tattee Watering               | Bheestees Mates ...                               | 1 6          | 6       | 0 0  |
|                |                               | Bheestees Bheestees ...                           | 8 5-10       | 45      | 0 0  |
|                |                               | Mates ...                                         | 1 6          | 6       | 0 0  |
|                |                               | Coolies ...                                       | 12 5         | 60      | 0 0  |
|                |                               | For Hospital Total Rs. ...                        |              | 423     | 0 0  |
|                |                               | Required for Barracks and Hospital, Total Rs. ... |              | 3938    | 14 0 |

If this be taken as the average monthly expenditure of a regiment in India; and considering on the one hand the cost of tatties not included in the above estimate, and on the other the number of European regiments located in climates where punkas are not required it may be estimated that the Imperial expenditure in cooling barracks falls very little short of, if indeed it does not exceed a lac and a half of Rupees or at £15,000 a month during the hot weather; an expenditure be it remembered which has a constant tendency to increase year by year owing to the mevitable rise in the value of labor in India as in the rest of the world.

It is not easy to form an estimate with any pretensions to accuracy of the first cost of such an arrangement as that we have been discussing;

inasmuch as the air compressing engine, though quite simple in construction is not I believe as yet manufactured except for special purposes. Some approximation may however be arrived at by taking the known cost of a 10 H. P. steam engine and boiler complete (3000 Rs.) and then assuming that the addition of air pumps and reservoir would double its cost, we should have a central source of power amply sufficient to work the punkhas throughout the lines of a regiment at a cost of about Rs. 6000.

If the above assumption be any thing near the truth, the approximate cost would be as follows:—

|                                                  |           |
|--------------------------------------------------|-----------|
| 10 H. P. Engine with air Pumps and Reservoir ... | Rs. 6,000 |
| 1 mile cast iron steam tubing 2 inches diameter  |           |
| at 1½ Rs. per yard ... ..                        | „ 2,640   |
| 2 miles ½ inch tubing at 8 as per yard ... ..    | „ 1,760   |
| 40 copper cylinders with pistons and cocks at 75 |           |
| each ... ..                                      | „ 3,000   |
| Total Rs.                                        | 13,400    |

Adding to this 20 per cent for laying the pipes and contingencies we should have Rs. 16,000, or about the present expenditure in one hot season, as the approximate cost for introducing the system into the lines of a European regiment.

The expense of working the machinery is however a matter of far more importance than its first cost, and this I think can be determined before hand with great accuracy in the case of a system where a single engine supplies all the power, and where the latter is conveyed to its work by means of iron pipes in which there is no wear and tear of working parts and consequently no depreciation of value or need of renewal.

The items in this account would be :—

- 1st. Interest on first cost.
- 2nd. Annual depreciation on value of engine.
- 3rd. Superintendence.
- 4th, Cost of fuel or of animal power.

The above working expenses according to my calculation could not exceed 25 per cent of the present expenditure, showing a theoretical saving of 75 per cent.

I have now endeavoured to shew that one of the most difficult questions connected with the employment of machinery for Punka pulling, namely the economical transmission of power, would appear to have been solved for us by the progress of mechanical science at home.

There are besides, other considerations which would seem to point to the present time as peculiarly opportune for renewed effort in this

direction on the part of inventors, and for greater encouragement on the part of Government. Until within the last few years, it must be conceded that the authorities had every reason to act with reserve in recommending the introduction of machinery of any sort to supersede manual labour in this country. The grounds for such caution however no longer exist, when we consider that there is hardly a large military station which is not within easy access to railway, Government, or contractors' workshops, so that any derangement to an engine or renewal of working parts which formerly would have involved an entire cessation of work for perhaps years, could now be set to rights in as many days. All over the cotton fields of the Bombay Presidency steam engines under charge of natives have almost superceded cooly labor in working the presses for packing the cotton for transmission by railway. In the case of a trade in which such keen competition exists, it may be assumed that they are not worked at a loss and that no difficulty has been experienced in maintaining their efficiency under native superintendence; why then it may be asked are we to be debarred from the assistance of steam in superceding cooly labor in Barracks ?

If an application were made to one of the firms at home whose speciality is the construction of air engines, accompanied by a plan drawn to scale of the lines of a European regiment and specifying that so many cubic feet of air per hour at a given pressure (say 5lb per square inch) were required at certain points marked on the plan, there can be no doubt that a design and estimate for an engine to fulfil the given conditions would soon be forthcoming, whether it were to be worked by steam or animal power. With this information made available it appears to me that the difficulties now surrounding the question would be brought within such narrow limits that its early solution might be confidently predicted.



## VIII.

## MODERN INFANTRY TACTICS,

BY

CAPTAIN F. ADAM, STAFF OFFICER, NEEMUCH.

## INTRODUCTION.

Je parlerai avec la liberté

D'un soldat qui sait mal farder la vérité—BRITANNICUS..

SEVENTEEN years have now passed since the morning when I made my way along the saloon of the *Orinoco*, a large transport bound for the Crimea, and thought to myself how I was to pass the remainder of the day. The duties were over and there remained in prospect, a pipe and reflection on deck, or a book. I decided on the latter, but where get a book? Every officer was travelling with the lightest of kits, and beyond a novel or two there was very little to be got in the way of reading on board. At that moment, I was passing the doorway leading to the companion, and my eye caught sight of a small cabinet relegated to a corner, and superscribed "Ship's Library." Thinking that I might find something worth reading, I opened the doors of the cupboard and proceeded to examine contents. The books were very few in number and consisted chiefly of military publications left behind by officers who had, many of them, found a grave on Cathcart's Hill or the Cemetery of the Light Division. I turned them over one after the other with some interest, until I came across a small volume entitled "The Maxims of Napoleon." Here was food for an enthusiastic novice! Armed with this, I mounted the companion steps and stretching myself on the deck proceeded to pore over the contents of the book with an interest that led me to reperuse it many a day after.

Among the maxims which I then read, was one which comes back forcibly to my recollection at present. It was that "Tactics should change every ten years, if we wish to retain our superiority on the field of battle." At the time of reading it, I wondered rather that any importance should be attached to such commonplace words, for had it not long ago been laid down, I might almost say as an axiom, that there were but two forms of tactics, *viz.* 1st, the deep or column formation; 2nd, the thin or line formation? That Continental nations had one and all adopted the former, and England alone the latter? For years past the axiom (it was really received as one) had never been questioned, and it was only on the introduction of rifled fire arms that doubts began to be expressed as to whether a revolution in tactics would not result therefrom, and as early as 1851, the Emperor Napoleon put the question to the Baron de Jomini.\* The reply of the latter was, that tactics would not change much, but that a thinner formation for attack would be advis-

---

\* Vide appendix to *L'Art de la Guerre*, Vol II.

able. Since then, the question of the effect of rifled arms on tactics has resolved itself into the question of the changes likely to be caused by breech-loaders. Three wars have exemplified their use and have furnished us with experience and facts, on which to base a new system. What that system is to be, does not yet appear to be determined. Before any innovations, Captain May remarks in his *Tactical Retrospect*, are admitted into the present received systems, they must undergo a long course of probation by all descriptions of troops, and accordingly all Europe has set to work drumming, bugling, drilling, manœuvring and discussing. Into the last mentioned arena I now enter, and to sum up briefly, I propose discussing the changes that are likely to be effected in Infantry Tactics by the introduction of breech-loaders, due regard being had to the constitution and spirit of the British Army.

## CHAPTER I.

In my introduction I mentioned that among Napoleon's Maxims was one to the purport that "Tactics should change every ten years, if we wish to retain our superiority on the field of battle." In these words lies a depth of thought which does not strike one on first perusal. We must not take them to mean literally, that there should be a change of system in our Field Exercise every ten years, but rather that our manœuvres should be so changed periodically as to adapt themselves to the genius of the nation, due attention being given meanwhile in altering circumstances to changes introduced by foreign powers; that the training of troops should not follow implicitly the model given by a power simply because it has been successful in warfare, but that it should be conformable to the spirit of the soldiery. Now this spirit of the soldiery is but a reflex of that pervading the nation, and to impose upon the soldiery of one nation forms which may suit that of another, is to run counter to the nature of the former, to prevent that useful and hearty co-operation in all the integral parts of an army which leads it to success and forces it to reject rudely these forms in the hour of trial previous to, its adoption of others more conformable to its nature. It is not thus that Tactics should be changed. 'Tis by watching the ever changing spirit of the nation, by restraining that spirit in our soldiery when shewn in certain forms, by giving it expansion when it reveals itself in certain other ways, that we shall arrive at the true solution of how "tactics should change every ten years."

I have been led to these reflections by the study of a work which has now a world-known reputation. "The Memorial of Prince Frederick Charles." It will be worth while considering for a little how a man of genius viewed the changes that were necessary to place the Prussian Army on a level with the spirit of the nation. He did not begin by advocating certain tactical forms, small columns, deep columns, lines or skirmishers, but he proceeded at once to dissect the causes which had led to the French Army gaining so many victories. He showed that in conformity with the genius of the French soldier, no restriction was placed on his individuality, that in action much was left to the élan of

the General, and that in consequence their tactics were very elastic. Contrasting these points with what obtained in the German Army, he found that the true warlike power of the individual was lost under the weight of discipline and authority; that it was necessary to augment the mobility of the Prussian Infantry and to open them a freer field of action; above all to give due latitude to the individuality of the well educated German soldier. This I hold to be the true training, the properly directed change in tactics. These principles were in conformity with the spirit of the soldiery and led to the victorious campaigns of 1866 and 1870.

If we recall what has been done of late years in the British Army to reform our Tactics, we shall find that many changes for the good have been introduced. I am not of those who foul their nests and are continually carping the cry of "They order these things better in France." (At present the cry is—in Prussia). Much has been done and in the right direction too, but I do not hesitate to say that a great deal remains yet to be done. We are too apt in England to ride small hobbies to the death and to fail in taking in a general view of the subject. We have ridden the Musketry hobby, the great gun hobby, the breech-loader hobby, long jack boots hobby, and now we have the Autumn Manœuvres hobby. To crown the edifice I only wish that English Military men would take up the "General-view-of-things hobby," for if well ridden much good may come of it. It will enable us to reject many useless forms, to adopt many useful ones, and lastly, but not least, it will impart a cohesion to our system of Tactics.

## CHAPTER II.

In the preceding chapter I mentioned that the spirit running through the soldiery of a nation is but the reflex of that pervading the whole body politic. When therefore, any changes take place in the latter, they react on the former. Who is bold enough to stand forth and say that immense changes have not taken place in the English nation since the year 1830? Who will say that its genius has not taken other directions than those into which it was grooved in the earlier part of the century? If we examine deeply and correctly the changes that have taken place, we shall find that individuality has sprouted forth from the masses in repletion; that in powers of mind and reflection the Nation has gained immensely, whilst these advantages have their concomitant counterbalance in an independence that brooks control and a struggling to rise higher than one's neighbours ever mind at what price. As a foreign critic remarks "very little remains of the subordination of the different classes which was once so remarkable a feature in English society." The expression of the feeling is however moderately and most forcibly set forth in an article in *Fraser's Magazine* for June 1871, entitled "English Republicanism by a working man."

"The Republicanism existing among the general body of the working classes is not of a revolutionary character in the warlike sense of the term. Utilitarianism would be more accurately expressive of its

" meaning. For years past it has been spreading among the working classes doctrinally to such a degree, that now it may be safely said " that it is in some more or less modified form, the political creed of " ninety-nine men out of a hundred.

" Though English Republicanism exists chiefly among the working classes, and is only openly avowed within these classes, traces of it are " to be found in the middle classes and the spread of it is upward."

Let us not shut our eyes to the spirit that pervades the masses, nor to the fact that our present soldiery are not the exact representatives of those whom Wellington led to victory so often in the Peninsula. I will concede at once that the great historical virtues of the English race remain unchanged ; that valour, stubbornness in fight, cool determination will always remain characteristics of British soldiers. On the other hand there is no doubt that a more widely spread education has developed in the soldier, as in the nation at large, other qualities, *viz.* more self-consciousness, a quicker perception and an impatience of fixed rule. It is with the amalgam of these qualities that we have now to deal, and the attempt to groove this amalgam into forms which were good many years ago is only to be compared to putting new wine into old bottles. Says Captain May in his pamphlet " On the Prussian Infantry"—" The " important difference between the present army and that of fifty years " ago does not lie externally in the possession of the needle gun ; they " differ essentially in their interior economy." Let us keep the glorious recollections of the past well in mind, let us not forget that what our soldiers did at Rorica, Vimiero, Corunna, Oporto, Talavera, &c. &c., they will and can repeat hereafter, but let us also remember that, owing to the gradual change of circumstances, in order to be able to emulate these deeds, the forms under which they then fought must be changed and adapted to the present spirit of the times.

It may be contended that nobody has yet seen the new spirit evincing itself in the Army, or at all events that it has not burst forth in any prominent manner. I allow that as yet the independence of character chafing under old forms has not shewn itself in any marked manner, though I must say that signs are not wanting that it is gradually thrusting itself forward.\* Nor on the other hand has the individuality of the British soldier prominently asserted itself. I attribute the former fact to the excellent corrective found in the esprit de corps of British regiments, which is a principle too deeply rooted to be easily shaken. Floreat semper, say I. Nothing can be grander, more ennobling than old traditions, and if they form the stock whereon to graft the new order of things, we shall be in a position to say to all comers " Lay on, Macduff, and damned be him that first cries Hold, enough." Herein lies our mainstay. To engraft the new spirit on the old esprit de corps, to allow the former full scope and yet curb it by an appeal to the latter, to give individuality and independence fair play, so long as they conduce in

---

\* The Courts Martial to punish soldiers for insubordination are certainly on the increase.



co-operating for the common good, this is the true training, the gradual shunting of the old into the new system. One great step in this direction has been taken by the localization of regiments. This will tend greatly to foster esprit de corps, to make regiments units of spirit and organization, and under its sheltering wing we may hope to see greater individuality allowed to the soldier. There remains one more step to complete the work. We must adapt the practical training to modern requirements, reject from our drill many obsolete forms, and collecting facts brought to our notice by the late war, only receive into it that which it is necessary to teach. It is here that we can give expansion to the individuality of the soldier and at the same time teach both officers and men "to judge of the right mean between independence of action based upon intelligence, and a spirit of enterprise, and the dependence upon superior orders which is necessary when co-operating with others for a common purpose." To quote once more from the same work, "Drill is not merely a preparation for the duties of active service; it is something more, for by strictly enforcing certain forms, discipline is strengthened and maintained."

To sum up briefly, the training of the English soldier should be two-fold.

1. The moral training in the Barrack Room.
2. The physical and military training on the Drill ground.

### CHAPTER III.

To carry out the moral training above adverted to, is the most important duty of an officer, and the British Army is pre-eminently fortunate in having a body of officers who can thoroughly carry it out; of whom I may justly say, *Secundi nullis*. In that excellent epitome of regulations for the training of troops issued by the Emperor of Germany, great stress is laid on personal bearing and its influence on the men. We find laid down that it is not sufficient to give an order or even to give "the right order and see it carried out; the *manner* in which an order is given has great influence on the conduct of the men." Now it is precisely this personal bearing for which British officers are so distinguished among their compeers. Said a French General Officer to a party of English officers at a public dinner at the Tuileries.—"There is one point in which your army will always be superior to our own"—and he left the Englishmen to guess what he meant. It was difficult for an Englishman to answer this, and there was no reply until the speaker himself finished his sentence thus—"It is that your officers are gentlemen."\* When we recall to mind the bearing of the French troops to their officers after Sedan and Metz, we are better able to appreciate what is good in our system. In the personal bearing of our officers we have the means of correcting the evils arising from the individuality and independence current in the masses, thrusting themselves too prominently forward

---

\* Major General Torrens' notes on the French Infantry.

and thereby injuring discipline. But to make the cohesion between the officer and private complete, it is necessary that the latter should look up to the former as a master of his profession. Men will no longer respect an officer who is led to his place on parade by the covering sergeant pulling the tail of his coatee, as I remember seeing in olden days, and it is necessary that instruction should go hand in hand with personal bearing. Efforts are being made in this direction, and great progress has been made. It may be urged and correctly too, that if a more practical turn were given to Garrison Instruction, better results would follow. As it is, we see Russia again crammed down our throats. Because Prussian officers carried maps of the invaded country in their pockets during the late war, every British officer must needs be turned into a draftsman without considering in the slightest whether he can draw or not. I hold that if he does not possess that qualification and a natural talent for eye sketching of ground, sans compass, sans chain, sans scale, a course of surveying at a Garrison School of Instruction will not be of much avail. Far better would it be if officers at these schools received lessons in more practical matters, such as rough road making, in sheltering men in bivouac, in erecting rough sentry boxes, camp kitchens, ovens, laying out camps, &c., &c. At present officers are crammed with the law of evidence, and are ignorant of the principles and practice of Modern Artillery. Pitch Simmons to the dogs ; read and re-read Owen's Lectures on Artillery, let a vieux Moustache show the best way of attacking and defending a village, a wood, entering passes and defiles, &c. The officer's natural abilities will complete his own education and free scope will be given to his individuality.

One great matter bars true progress. Officers of late years have been turned into veritable clerks, and an immense number of new forms have been introduced, which involve an expenditure of time in their preparation which might be usefully devoted to the study of military subject. I cannot do better than quote on this matter the words of a writer in the *Saturday Review* :—

“ Staff as well as regimental Officers suffer from the immense amount of work demanded of them. With great trouble to themselves and at a great cost to the country, they receive a highly scientific professional training, fitting them for the most important and responsible duties ; yet when they obtain a staff appointment they find their time chiefly taken up with a useless routine correspondence which could well be performed by ordinary clerks. The authorities in fact employ a razor to cut wood.

“ It is not surprising that with such a training, officers become idle and utterly incapable of systematic study. It has at length come to this, that an officer cannot perform all his duties and both maintain his bodily vigour and cultivate his mind. The authorities must therefore clear away some of the useless labour which they so ruthlessly impose. Fortunately they have it in their power to do so without injury to the service, nay, with a positive gain to it. The course is plain

“ before them. They should simplify the accounts and system of payment, which not only give officers endless trouble but cause much discontent among the men, who view with disgust the difference between nominal and actual pay. They should introduce in regiments a practice of oral reports, and should abolish three-fourths of the existing returns, supplying for those which are retained simple printed forms which require only to be filled in with figures. They should likewise condense and arrange the regulations, extricate military law from its present disgraceful state of chaos and shorten the proceedings of Courts Martial. If this were done, officers would feel themselves no longer clerks but fighting men, and would employ their time in fitting themselves for those duties in the field to the training for which the present system allows them no opportunity.”

It is superfluous to add to the above extract. I will however remark that if there be cause for complaint on this score at home, there is still more cause for it in India. In the Bombay Presidency, so spread over many large volumes of General orders are the regulations obtaining there, that a Staff Officer has to turn himself into a walking compendium of rules. Let us hope that it will not be long before they are codified, that the disgraceful chaos will ere long be reduced into some order, and officers spared the time, now frittered away in hunting up rules which should be ready at hand for reference.

#### CHAPTER IV.

I now enter on the discussion of the most important part of my subject, the Drill of the British Army.

The spirit of the times runs no doubt into specialities, and to carry these out it is necessary that every little wheel in any machine should be simple, easily worked, and that all superfluities should be discarded. This holds good in drill as in any other matter, and we may therefore lay down as a premise to be carefully kept in view that to fulfil the spirit of the times drill should be simple concise and elastic. By the first term, I mean that all motions and movements should be so adjusted as to be easily comprehended; by the second term, that it should be based on a system that anticipates service in the field and consequently every thing extraneous to that is excluded; and by the third, that movements can be changed and developed into one another with ease and without confusion. Keeping the above premise then well in view, I propose entering into a practical discussion of drill, and for simplicity's sake I will divide drill into three portions.

1. Mechanical proficiency with arms.
2. Do. Do. in movements.
3. Intellectual application of the two former.

Manual and firing exercises. The Manual Exercise of the present day is the same as that which reigned supreme forty years ago. It con-

tains no less than 31 sections; some of which, such as the advance from the shoulder, are never used. Now in this we might certainly with advantage copy the simplicity of the Prussian regulations, which have but nine sections in their Manual Exercise, and they are really all that are required. They are—

1st. The Shoulder (same as our Advance;) 2nd, The Order; 3rd, The Present; 4th, The Shoulder from the Present; 5th, Sloping from the Shoulder, from the Order; 6th, Shouldering from the Slope; 7th, Ordering from the Slope; 8th, Examining Arms; 9th, Piling Arms.

We must bear in mind that the Recruit of the present day has many more subjects of instruction to go through than he had formerly, while on the other hand the time for a thorough training is much reduced. Simplicity should therefore be aimed at and superfluities discarded. I will however take the opportunity of remarking here that simplicity of movements should not be the plea for laxity of the same. It is in my opinion, in the Manual and Firing Exercises and in Recruit Drill that we have the best corrective of what is bad in the spirit of the times. I repeat again my former quotation "Drill is not merely a preparation for the duties of active service; it is something more, for by strictly enforcing certain forms, discipline is strengthened and maintained. "The training of *individuals*, be they officers or men, constitutes the "foundation for the efficient training of any body of troops." The forms to be enforced are strict and fixed attention, and a duration of instruction which will ensure mechanical proficiency. In former days the British army was notorious for the minuteness of its drill and much valuable time was lost in correcting paltry details. Foreigners were especially struck with our vigorous and skilful "*maniement des armes*," but times are changed and it is now too much the fashion to gloss over small faults and to allow recruits to join the ranks a great deal too soon. This is a mistake. We thus let slip from us one of the best opportunities for framing the young soldier's mind in the ideas of discipline which he should carry with him into the ranks. A young soldier to whom the instruction is fresh, who is not bored by the details, and who enters into the spirit of the drill because it is something new to him, can be trained into good habits. Force him into the ranks before he has obtained the proper mechanical proficiency, and you burthen at the same time the Adjutant with a world of trouble which should never have been brought into the ranks. *Credite experto*. This should not be. No recruit should join the ranks until he has been through at least a six months' course of recruit drill, in which I comprise Manual and Firing Exercises, Squad and Company Drill.

With this drill I would combine Fencing and Elementary Gymnastics. They are a relief to the grind of Recruit Drill and while the former educates the eye, the latter relaxes the muscles of the body stiffened by the fixation imposed on them by the Recruit's course.

The Bayonet exercise should be remodelled, and the men taught to guard against Infantry, against Cavalry, and the proper parries en-

quarte and en tierce, the couplonge, the volter, &c. &c. It should be taught in the Fencing School.

Of the Firing exercise and modes of firing I can only repeat what is laid down in the Regulations, that the more carefully, they are gone through, the better will it be for the soldier's, and I will add, discipline's sake.

On the subject of Musketry Instruction I have a few remarks to make. The first is, that considering that in an action firing will in future be commenced at longer ranges than was the case in olden days, it may be conceded that once a man had entered the 1st class and proved himself proficient in shooting up to 400 yards, he should no longer in succeeding years be trained up to 400, and that the shots so saved should be expended in skirmishing practice from 1000 to 400 yards. The points made in this should determine who are to be considered marksmen, and those who pass the test should form a body by themselves with special duties which will be pointed out when discussing Battalion movements. These men I propose arming with a rifle sighted up to 1200 yards.

Passing on to the second part, *viz.* Mechanical proficiency in movements and beginning with Recruit or Squad Drill, I will remark that the drill practised in the British Army is acknowledged by foreign critics to be very complete. It might be simplified in one or two particulars as I will now briefly note.

Facings. The left about, and  $\frac{3}{4}$  Right and left about turn might be left out. Practically these turns are never used.

Marching. The step should be—

- |                          |                       |
|--------------------------|-----------------------|
| 1st. Slow step at        | 75 paces in a minute. |
| 2nd. Quick step at       | 108 „                 |
| 3rd. Accelerated step at | 125 „                 |
| 4th. The Double step at  | 170 „                 |

I reduce the cadence of the Quick step, and introduce another to be called the accelerated. The recommendation is based on personal observation. The cadence of the present Quick step is 116 a minute, and at that pace it is impossible to keep the body and arms in the position as directed in Section 1 of the Field Exercise, without cramping the soldier. When moving at such a pace the action of the lungs should be perfectly free, and to allow this, the arms must swing and ease the muscles of the chest. Again we actually find that except when on parade, the quick step is not kept up, and that on the march the step rarely exceeds 108 in a minute.

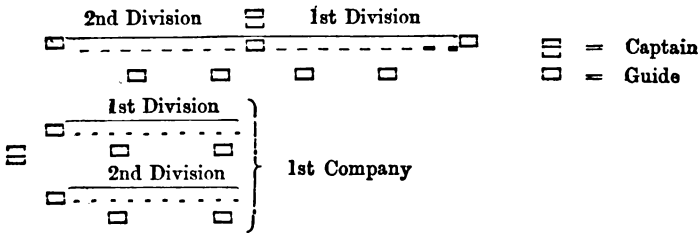
Another consideration points to the advisability of men, when moving quickly, being allowed to swing their arms. Cramping the muscles of the chest leads to men losing their breath and causes a great tension of the other muscles of the body. These in their turn in

their reaction cause the hands to become unsteady and prevents a true aim being taken when firing. As so much now depends on steady firing, the point to be aimed at is to attain only that amount of rapidity which will not disturb the steadiness of aim. Training the men at an accelerated step with liberty of movement will ensure this, and I am borne out in my suggestion by a distinguished officer of the British service who has remarked on the suggestion that "the idea of an accelerated step is excellent in the place of much doubling, during which young soldiers try to outrun each other, and run themselves out of breath and render themselves unsteady for firing correctly afterwards."

**Stepping Back.** The pace to be reduced to 12 or 15 inches. Practically the full step is never taken.

**Skirmishing.** To be simplified in that the rear-rank-man shall always be either in rear of the front rank man or on his left. Never on his right.

**Company Drill.** Companies to be formed of two divisions of two sections each, the Captain's position in line being two paces in front of the centre, and in column two paces on the left flank.



The divisions will be the companies of the present organization and the Company formed of two divisions officered by a 1st Captain, a 2nd Captain and four subalterns. The object of this will be explained hereafter in the discussion on Battalion movements.

**Change Front.** To be eliminated.

**Change Direction.** On the line of March, the change of direction to be effected by simply the Captain giving the word of command "Turn to the right, or left," on which the flank will turn in the direction named, the remaining files doubling up.

**Countermarching.** To be done by files and not by ranks.

The Company drill should also contain a few sections for the manœuvres of a company, such as: 1st Deploy right or left; 2nd From line form quarter column by flank march of fours; 3rd Skirmishing one division as a shooting line, the other in support; 4th Advancing and firing by alternate divisions, &c &c.

Skirmishing. We may safely copy the Prussian regulations on this head. They lay down :

1st, That the two men who form a file in close order, remain near one another. It is a matter of no importance, whether the men stand side by side or one behind the other. The interval must in all cases depend upon circumstances. In ground that is quite open and level, the files must not be more, than six paces from each other.

2nd, When required to be more under the complete control of their leaders, the skirmishers remain together in closed firing groups of sections.

3rd, The officers must be thoroughly proficient in the use of the rifle, so that when the moment for the fight authorises it, they can take a trial shot themselves and regulate the fire accordingly.

4th, A shooting line fires as little as possible when moving.

5th, In reducing a shooting line, the men of the sections or division called back, must retire to the rear with a quick step, *but without running*, and collect themselves in rear of the support.

The above points should be embodied in a new edition of the Field Exercise and the regulation bugle calls reduced to 6 in number, viz: Advance, Halt, Fire, Cease Fire, Assemble, Alarm.

#### BATTALION DRILL.

I must here repeat the premise I laid down before, that to fulfil the spirit of the times the drill should be simple, concise and elastic. This applies especially to the drill of a Battalion, for we are now dealing with what is the tactical unit on the field of battle. All the movements should simply anticipate the obstacles to be expected thereon, and they should be very few and simple. Unfortunately our field exercise, though much reduced in size and contents, still contains manœuvres which might be replaced by more important matters of instruction.

Beginning with Section 4, I will say that the proper place of the Captain in line is in front, for it is there that his own individuality will be best brought into play, and that of his men called forth or checked. The idea of placing the Captain in rear is preposterous. He can there neither direct nor restrain his men, and I will be bound to say that in no actions have British officers done otherwise than rush to the front either to lead their men or check their ardour. Placed as they now are in rear, they are nonentities.

In Column the Captain's place should be on the flank and clear of the guides. He can from that position get a good view of his men.

The next (Section 4) to which I will refer, "Advancing and retiring in line," is one which of late years has created great contention in military circles. The manœuvres of a Battalion are made with a view either to defend or attack a position. In the former case the battalions are drawn up in line with columns or a second line in support. The

advantage of the formation is obvious. The extent of front permits of a heavy fire, or with breech loaders it would be more correct to say, a murderous fire being opened on the attacking party, and as the Battalions are not called upon to move much, their formation is not broken, nor from being generally able to secure good cover do they suffer much from the enemy's infantry fire. This was the great art displayed by Wellington in most of his Peninsular battles. He chose good defensive positions which were strategically offensive, shattered the attacking enemy by the fire of his thin line and when they were well shaken, he charged a short distance with the bayonet. It is not the case that when he attacked, he or his generals invariably marched against the enemy in line. A perusal of the accounts of the attacks at Rorica, Oporto, Salamanca, Orthes and Vittoria will disprove it, and show that English regiments attacked in column as well as in line. In fact if the records of the Peninsular campaigns be carefully searched, we shall find that year by year the British Force got more and more into the French mode of fighting, and that at Orthes the attack of the 52nd across a morass was a perfect prototype of many a French attack on English positions. Unfortunately the *thin red line* was seized on as a hobby, and it has been ridden to such an extent that even in the days of Brown Bess it has brought us into scrapes. The battles of Ferozshuhur and the Alma furnish as with examples of this. I have no book to refer to regarding the former action, and I trust to my recollection in quoting how severely some British regiments suffered on that occasion from the unwieldiness of the attacking line; but I know full well about the latter that "a belt of garden ground, a winding though fordable stream, and *an enemy hitherto inert* sufficed to make Sir G. Brown "despair of being able to present his troops to the enemy in a state of "formation." The 1st Brigade Light Division was beaten back with heavy loss, and at no time during the engagement was it possible to reform it, in consequence of the confusion into which it had been thrown.

Now how much more difficult is it not in the present day to attack a position with a line as laid down by regulation. The fire of the enemy is more deadly, and the attacking line suffers from it at very increased ranges, two facts which lead it to be generally accepted that it is impossible to attack a position under the present form. Fortunately the late wars of 1866 and 1870 furnish us with valuable facts, on which to base a correct system of attack; and I will now before laying this down authoritatively, advert to what these facts tend to prove.

We have all heard of the famous company columns introduced into the Prussian Army in 1847. These were introduced, I am inclined to think, owing to the unwieldiness of their battalions. Composed as they are of some 1000 men, it was impossible for the Commander to wield or manœuvre so many in line. The natural solution was to break the line into small columns which allowed of their being rapidly formed into line. Accordingly the formation was tried tentatively but no great faith was placed in it. Indeed in the campaign of 1866 it was laid down as a rule to be observed by Commanders of Battalions that they



were to manœuvre by half battalions. But in ordering this Steinmetz and other corps leaders lost sight of the changed spirit among the mass of the ranks. Education made this element reject the formation, and try to bring into play the superior arm in their possession. The history of the change has been forcibly written by Captain May of the 44th Hohenzollern Regiment in his famous tract "the Tactical Retrospect." He therein points out—"We observe one pervading phenomenon in the battles of 1866, that is, a most extraordinary extension of front with a very small degree of depth. The whole force appears extended in long thin lines or separated into individual bodies fighting independently; above all, there appears an inclination to surround the enemy by long extensions of the wings. Different divisions wing themselves up, sometimes in the battle, sometimes before it becomes general; in action troops are almost always formed in company columns, sometimes in half battalions. These resolve themselves into skirmishers, supports, melting into these two, &c., &c. \* \* \* \* \* This mode of fighting has an invariable result, a greater extension of the front line, and Captain May's conclusion is, "that it is thus naturally indicated that companies should be brought up independently against the enemy with the greatest vigour."

Very true all this. But, we must not allow it to lead us too much astray, otherwise we shall jump at the hasty conclusion that attacks must now resolve themselves into attacks by skirmishers. The story of the pressing to the front and toward the flanks is an old one. Shove aside Bill, said our men at the Redan, and let us have a pot at the Rooshians. It is much easier to lead men than to restrain them when once the pinging of bullets makes itself heard, and the individuality possessed by the rank and file of the present day renders this still more difficult. For my part, I utterly reject the idea of positions, held by a strong firm enemy being carried by skirmishers, and I believe that what is now called "order in disorder," is simply dangerous with soldiers who have not been already tried in several actions.

Proofs of this are not wanting. At the battle of Koninggratz where the loose individual mode of fighting reigned rampant, one regiment lost 2,500 men out of 3,000, and at 1 o'clock (the action commenced at 7-30 A. M.), the Prussian line was losing ground. Why was it losing ground? Simply, because the desultory mode of attack rendered any united action against a particular point impossible. Captain May himself confesses "that this mode of fighting is dangerous, because the enemy by an attacking force concentrated on one point suddenly applied, may break and drive in the small individual divisions; and as examples of this he instances the defeats at Trautenau and Lengszalza."

Of Gravelotte we find it recorded "that after fighting for hours and trying to make an impression on the French line, little or nothing had been effected to break it. At an immense sacrifice of life a few advanced points had been taken, but towards 6 P. M., the French again

"advanced from the rifle pits to which they had retired and took possession of their original position. We expected every instant to see the Cavalry charge down the road on which we were standing. Nothing could have resisted them at that time had they done so, for such was the panic that the Prussian soldiers in our neighbourhood ran like hares. I say panic advisedly, for it was not fear that made them run. \* \* \* \* Any one coming up at that particular moment would have been under the impression that the Prussians had been completely routed. Such a stampede I never saw before, and I should think few military men ever had. Artillery, foot soldiers, wagons, every species of troop conceivable in our immediate neighbourhood, were rushing pell-mell to the rear."\*

Now be it remarked that it was on the right of the Prussian Army where the attack of "order in disorder" as it is called, took place. Rushing from the Bois des Ognons, the Prussian regiments dissolved themselves into a skirmishing body and rushed on to the French positions at Saint Hubert and Rozerieulles. Without cohesion, without a directing hand the mighty wave shattered by the fire of the French Infantry and Mitrailleuses dissolved itself into foam. Had a master-hand only directed the French Army and its reserves, the battle was lost by the Prussians.

The advocates of this "order in disorder," make a great point on the other hand of the attack at Saint Privat by the Prussian Guards. They not only point to the defeat of the Prussian attack there, but go a good way beyond, pointing out that order, as represented by the columns used on that occasion, was turned into disorder and repulse. They declare that all such positions should be attacked by swarms of skirmishers. Fortunately light is gradually being thrown on the events of 1870, and I will state that doubts which I originally entertained as to the causes of the repulse at St. Privat are gradually being confirmed.

The work of Von Rustow gives the best description I have yet read, of the military events of 1870-71. Written without partiality or affection, it lays before one a bare unvarnished tale, and from this we gather with reference to the attack at St. Privat, that the vaunted Prussian Army made some terrible tactical mistakes. With an army of men numbering at least 231,000 men they attacked on a front of seven miles an enemy half their number and in a pell-mell manner which nearly brought on disaster. Of the attack on the left we learn that the Prussian Artillery began firing at a range of some 4,000 yards; that finding the fire of the guns first brought into action ineffectual in shaking the French position, they advanced to about 2,000 yards between St. Ail and Amanvillers, massing 84 guns which formed such a target that before they had been half an hour in action, a quarter of the huge battery was dismantled. Meanwhile the Saxon corps

---

\* Winn's What I saw of the War.

had been sent to turn the French right, but getting impatient at the delay (it was nigh 6 P. M., before they came into action), it was resolved to attack the position of St. Privat with the division of Prussian Guards. Let us hear what an eye witness, General Walker, says. Alluding to the tactical mistake of attacking a position before the enemy's infantry has been well shaken by artillery fire, he frankly confesses—" *I would rather not say all I heard in Berlin concerning this attack.* I am most confidently assured by one of those who commanded on that day, that the great reason of the loss was that the attack was not prepared by Artillery ; it was the improper use of Artillery which led to the great loss. The Prussians advanced in the most extended order which they acknowledged to be effective, which was a line of company columns joined by skirmishers, supported by half battalions and supported further in the rear by another line of battalion columns." The attack in column failed and the columns then resolved themselves into skirmishers in swarms, and regarding these General Walker speaks just as plainly, acknowledges that the "swarm attack" failed just as much as the one in columns, and ends by saying, "you cannot fight in extended order unless your men are thoroughly in hand ; otherwise they become a mere mob, each man fighting for himself."

Another eye witness of what passed at St. Privat, Lord Mark Kerr gives equally damaging evidence. "The swarm of skirmishers at St. Privat was always too thick a swarm. On their left at St. Marie aux Chenes and St. Privat, they were brought up swarm after swarm, not close enough where they would have been safer but straight into the range of the French fire only to be shot down one after the other, literally strewing the ground thick as autumnal leaves strew the brooks."

On the other hand the battle of Gravelotte furnishes us with an instance of an attack being successful, though carried out in semi-solid formation. At a point between Verneville and Amanvillers, a body of Zouaves defying the hail poured into them by needle gun and breech loading cannon, attacked a Prussian battery and not only succeeded in shooting and bayonetting the gunners, but carried off two cannon which were never re-captured.

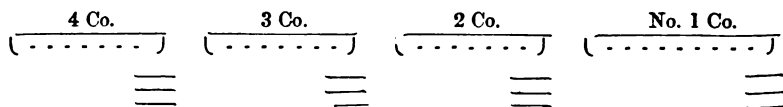
Taking a retrospect at the battles of Weissembourg, Spicheren, and Woerth we find that columns, in some cases small, such as company columns, in others columns of half and whole battalions attacked the French positions with success by taking advantage of the features of the ground, and in the case of Spicheren fired into the opposing line at a distance of only 50 yards. The positions had, be it noted, in every one of these actions been well shaken by Artillery fire. We have also evidence to prove that the Prussian Company columns by the rapidity with which they can resolve themselves into a line or into skirmishers, proved very effectual in Brittany, in repelling the French sorties from Paris and the attacks of the Garibaldians at Dijon. Captain May's theory that in a future campaign, regiments should be manœuvred not as a whole but

by companies, and that full vent should be given to the individuality of the Captain proved itself in many cases practicable and successful during the campaign of 1870-71. The events in Picardy also show that under certain circumstances an attack by a swarm of skirmishers can be successful.

Summing up briefly then, the facts furnished by the wars of 1866, and 1870, tend in my humble opinion to prove ;

1. That an attack by a rigid, straight line is unfeasible ;
2. That an attack by a swarm of skirmishers may be successful, when well prepared and pushed against an enemy inferior in discipline and morale ; but that against an enemy well disciplined and handled, it is very liable to turn into something worse than a repulse ;
3. That an attack by small columns, or small bodies of men in formation is feasible, if the enemy's position has been well shaken by Artillery fire ;
4. That these small bodies should be directed by the Captain.

The question is what formation would best suit the British Army of the present day for attack. I take it for granted that no body will deny that with breech loading arms, depth of formation is to be avoided, and that the tactical formation of line offers this the least, while it allows the best chance of returning the enemy's fire with effect. We Englishmen pride ourselves with justice on the splendid shooting of our men. Cool, determined and unimpressed as they are, and will ever be when firing, we throw away our best chance of effect, if we neglect to take advantage of our superior power in this respect. Let us then by all means retain our thin formation and let our efforts be directed to making it more pliable, more elastic. This could easily be effected by manœuvring in line of companies (of two divisions), each company being separated from its neighbour by an interval of from 10 to 15 paces. The formation I propose is best exemplified by the following sketch



We thus break up the rigid English line into four small bodies, very easily moved over any ground, and give to the Officers Commanding them free scope to use their individuality, to take advantage of every feature of the ground, to work freely and we retain at the same time cohesion and the free use of the shooting powers of our men. In fact the purport of the formation is the substitution of a flexible chain for the rigid rod of the present regulation line.

It will be observed that in rear of the right of each company is placed a small section. These sections are composed of the marksmen of

the company whose powers of fire will be brought into play either as a covering body or a first line of attack. The sections form small firing groups, whose small size enables them to obtain readily shelter to fire with precision and without hurry.

That such a line can manœuvre freely and rapidly I have myself tested on parade. I am of opinion that they would retain the necessary cohesion so necessary in action. Of the advantage of order in small bodies, I can quote a striking example furnished by an incident at the battle of Sedan. It is described by Dr. Russell in "Passages from his private diary." "A thick line of skirmishers advanced against the French position and engaged their line. Suddenly the French Cavalry appeared and at that moment from the Prussian side and from an opposite plateau there appeared what seemed to be a handful of infantry—a company at most—marching however in solid order. It was a mere block, a little parallelogram of dark blue upon the green field. The fire of the Prussian skirmishers was replied to by the leading sections of the French Infantry. The skirmishers catching sight of the shakos and the sabres, turned and ran back towards the support of Infantry *in formation*. . . . It was not till the front of cavalry had reached within a couple of hundred yards of the infantry, on the flanks of which most of the skirmishers had rallied *somewhat unsteadily*, that there came out the whiff and roll of a volley, which was kept up like the roll of a Catherine wheel. The result was almost incredible—the leading squadron was dissolved into a heap of white and grey horses."

Now will any old soldier say that if the support of the line of skirmishers had been in extended order, as some advocate, it would have been possible to act in the way the Officer Commanding this company did. I stoutly deny it. Running is very catching under an enemy's fire we know and feel the truth of the old story. "Be japers sur, it was me legs that carried away me heart;" and if once a line of skirmishers is seen running to the rear by another extended line in rear of them, the whole will give way. I dare say some will come boldly forth and say that English soldiers never run away. To this I reply "Ask what happened in the trenches when the men came running away from the Redan."\* Running is catching and the bravest men will at times be carried away by the infection. I could quote many instances of it. Let us have done then with this humbug of "order in disorder." It will do for old soldiers who know what fighting is, and have received their "baptême du feu." For young soldiers I should decidedly call it a dangerous experiment, and I hold that to attack any enemy with success, one must do so in order, and that with British soldiers this will be best secured by a line of companies with intervals and with a covering line of the best shots to prepare the attack.

---

\* I wish here to state that by this I do not mean to cast any imputation on the reputation of one of the finest Regiments in the British Service. The officers on this occasion acted nobly. Seeing that the men were catching the impulse given by those flying from the Redan they rushed out into the open and forced the men back by their example and determination.

This will involve a slight change of organisation. It will reduce the number of companies in a regiment to four, officered by a 1st Captain, a 2nd Captain and four Lieutenants and Sub Lieutenants. Into this detail of organization I do not propose to enter, and I will confine myself to stating that by giving the Captains of bodies more responsibility, we best fulfil the spirit of the times.

The other proposed changes in the drill book are—

1. In column the place of the 1st Captain should be on the flank and clear of the pivots by two yards, so that he may properly supervise the march of his company

2. Section 16th, to be eliminated.

3. Ditto ditto. The retirement in column should be effected by giving the word of command "Retire in column of divisions from the left." On this all but the right company form fours and retire in succession, the right company is thrown into skirmishing order and makes a counter attack to the front and then retires as a cover to the column.

4. Section 25, Column should always be formed in natural order. No necessity exists for inversion.

5. Section 31, to be eliminated

6. Section 30. to be substituted by the rule laid down in the Prussian regulations. A company is marched off the alignment; made to dress in the direction of the required line and the other companies conform by order of the Captains of companies.

7. Section 38, Part 2 to be substituted by company squares.

To sum up, the new drill book would only contain the following sections of Battalion Drill:—

1. Advancing and retiring in line; advancing and retiring by alternate companies firing.

2. Passing to the front in fours; retiring in ditto.

3. Closing and opening out of columns.

4. Advancing by successive divisions; changing direction.

5. Wheeling of a quarter column.

6. Advancing and retiring from a flank.

7. Wheeling into column and into line.

8. Forming column of divisions and of companies from line.

Forming company columns from line.

9. Forming line to the right or left.

10. Deployments.

11. Squares.

12. Changes of front and position.

13. Echelon movements.

The simplicity introduced in the Battalion Drill should also be carried out in Skirmishing and Brigade Drill. In the latter, Section 7 of general rules should be modified and a few paragraphs inserted giving rules to be observed for a Brigade formed as the first line of attack, as the second, or in support, and as a reserve.

#### CHAPTER V.

The third division of my subject is, as I said in the beginning of Chapter 4—"the intellectual application of the two former ones." It consists in practising in peace such manœuvres as are required in warfare, and in bringing into play as much as possible the intellectual faculties of the men. Their imagination must be stirred, their physical powers developed, and they must be taught the great lesson of self-reliance and judgment. It is in this part of the training only that officers and men should be made to apprehend what Colonel McDougall has aptly termed "the speed of irregularity divested of confusion," to aim at attaining a common end without being shoulder to shoulder. To impart this training thoroughly it is necessary to begin by teaching the individual; and this can be thoroughly carried out by the Captains after they shall have themselves been instructed in the details they have to impart to others. Of these details a very complete list is furnished by Captain Brackenbury, R. A., in a lecture delivered at the R. U. S. Institution, and which he quotes as having copied from a French Journal "*La Revue Militaire de l'Etranger*." The list is so complete that little or nothing can be found to add to it.

1. Place the men on broken ground and teach them how to act on the defensive. Point out the features of the ground which afford cover, how these features allow of enfilading fire being brought to bear on an enemy. How the troops can be supported by Infantry, by Cavalry, by Artillery; how to combine the action of dispersed troops with those in formation, where the reserves would be, &c. &c.

2. Show them how an enemy placed as they themselves were, can be best attacked.

3. Show them how and under what circumstances it would be advisable when retiring, to assume the offensive.

4. Practise receiving Cavalry in line, in column, in skirmishing order; choice of broken ground for this.

5. Practise the attack and defence of woods, maintenance of communications therein; show the advantage of holding the outskirts and roads.

6. Defence and attack of defiles, fords, bridges, &c.

7. Defence and attack of villages, street fighting; strengthening advanced positions; advantage and disadvantages of points in a position.

8. The construction of field works, shelter trenches, pits, &c.

9. Duties of covering parties in a siege.

10. Reconnaissance, outpost duties, &c.

11. Duties on escort and convoy.

The theory of musketry.

In this instruction full liberty of movement should be allowed. There should be no injunctions as to keeping step, correct dressing, covering, carrying of arms and the minutiae observed on the drill ground. These must be left to the men's common sense. On the other hand it should be dinned continually into their ears that no shot should be thrown uselessly away and that the initiative of a rush on the enemy's position rests with the Captain alone. His must always remain the directing head, and all others must be subservient. In this lies the cohesion which I have so strongly advocated and without which, I repeat, a body of men in these days of breech-loaders would soon be turned into a rabble.

#### CONCLUSION.

My task is now finished. I refrain from entering into the subject of the effect of breech-loaders on higher tactics for two reasons;—1, because my experience is not sufficient to allow me to preach on the subject *ex cathedra*, and I therefore deemed it better to confine myself to such subjects as I am practically acquainted with; 2, because did I enter into the discussion, I should run counter to the ideas that are now running rampant through the military world in England. I am not one of those who think that breech-loaders will cause a revolution in the Art of Tactics. That the powers of attack are now much diminished and that the role of a British Army in a conflict on the Continent or, may God forefend, on our native land, must in the future be a defensive one. I am proud to enroll myself among those who stick to the good old rule laid down just 1800 years ago by Tacitus—“*Quid in rebus militariis maxime prodest? Audacia et semper audacia.*” That rule holds good now as it did in the olden times. It has a most powerful adjuvator in unity of action; and for this we should all strive, by making the most of the powers of our men, by turning these into a direction which will eradicate the bad qualities engendered by the civilization of the 19th century and developing those that will aid in the common welfare. Thus and thus only shall we be able to make them comprehend the true signification of *Res publica*. From what I know of the British Army, I feel that this end will be attained before long.



# REVIEW.

## HASTY ENTRENCHMENTS ;

By COLONEL A. BRIALMONT, BELGIAN STAFF,

*Translated by Lieutenant Empson, Royal Artillery.*

This is the title of an interesting little brochure by an Officer of the Belgian Army, who, unless there are two of the name, may claim both by his writings and by his practical experience, as exhibited in the new fortifications of Antwerp, to be esteemed the first authority of the day on the subjects of which it treats.

The book before us is limited to the consideration of such defensive works as can be constructed within two or three days, by the troops ; with the tools and materials only, carried with them or obtainable on the ground.

It opens with some general remarks on the value of fortified positions which few we presume will care to question and then proceeds to the construction of shelter-trenches. The author defines the object of these to be:—To conceal and protect the troops while acting on the defensive without hindrance to their offensive movements when it may be desirable to resume them. Bearing this in mind, as we proceed to examine the profiles of the works proposed through the book, we are reluctantly led to the conclusion that the problem is still unsolved and that of the three requirements specified only the last is partially attained. First as regards concealment, the same objection applies to these works as to those of all systems of Fortification, that "to see is to be seen," and that the long lines of freshly excavated earth work afford as much or more advantage to an enemy in defining the exact position of the defenders as they give to the latter in the way of cover.

It is true that attempts are sometimes made as at Sadowa to give these trenches the appearance of ordinary hedges, by planting them with brushwood &c., but the withering leaves betray the imposture at a glance, and though the expedient may be useful in sporting to deceive deer, or ducks, it will hardly take in the practised military observer.

Next as to protection.

All the profiles of works given in this book are necessarily unrevealed ; consequently all the slopes are under 45 degrees, according to the nature of the soil in which they are excavated.

These may be sufficient cover against musketry fire with a very flat trajectory or even against shells with percussion fuzes, but what protection would they afford against high-angled fire of shell or shrapnel with time fuzes, such as would invariably prelude an attack in the pre-

sent day. The greater the range and therefore the elevation, the greater the descending angle of the the projectile. With  $12^\circ$  of elevation this is nearly double, say  $22^\circ 30'$ , which supposing the parapet to be 3 feet high would permit a shrapnel ball, grazing the crest, to strike the ground seven and a half feet behind, which in most of the profiles given would be exactly in the centre of the shelter trench. It may not be easy perhaps at a considerable range with that elevation to graze the parapet at each shot, but as we have said it would not be for want of a conspicuous mark, and some recent practice at Woolwich with the new 16 pounder Gun at 820 yards, showed about 3 rounds in 10 effective, distributing 131 bullets over a square of 30 yards immediately in rear of a parapet 10 feet high from which some idea may be formed of the percentage of hits at other ranges. On the whole therefore we are led to the conclusion that the shelter and concealment of continuous shelter trenches as at present constructed is merely nominal and that attention should be turned to their improvement. Something like a modified rifle-pit seems the most practicable; capable of containing two men only, without any parapet to betray it, the earth excavated being scattered at some distance round, the depth would be six feet with a berme or step of a foot and a half, and steps behind to allow of easy extrication. At three feet wide this would give less than three cubic yards for excavation by two men, and at 30 cubic feet in average soil would be about 3 hours work. This is of course greatly in excess of the time required for ordinary shelter trenches but the cover would be infinitely superior and it is rare that troops are so restricted as to time. The pits might be constructed, in two, or even three lines, with intervals of three or four yards between them, to admit of the passage of Cavalry or Artillery. The Guns would similarly be placed in pits as proposed by Captain Moncrieff for his elevating carriage and if, as seems to be the case, the Americans have succeeded in producing an Elevating Gun Carriage in which the heavy counterpoise of Moncrieff's Carriage is replaced by the action of condensed air, and which is applicable to Guns of any weight and calibre and to field or garrison carriages; the probability is, that in future, the Artillery will be the least exposed of all the three arms when acting defensively.

Having discussed the construction of shelter trenches, Colonel Brialmont proceeds to apply them to the defence of positions and of villages, with illustrations from actual battle-fields and this is the most valuable part of the work, though we can hardly agree with him in including "dams" and "stone fougasses" as elements for hasty defence. On the whole the book is a useful supplement to the manual already in use in our service (which has been noticed in these pages) as showing the "tactical" application of Field fortification, on which our English works are usually silent, and as such it should be perused by all who care to rise above the mere A B C of professional study.

## NOTICE.

---

Members changing their addresses are particularly requested to notify the change to the Secretary, in order that delay in forwarding the Proceedings may be avoided.

Nos. I, II and III of the Proceedings have now been re-printed, and are available to Subscribers for the year 1871. Members desiring copies are requested to apply immediately to the Secretary.

J. BAILLIE, *Lieut.-Colonel,*  
*Secretary.*

*May 29th, 1873.*



## NOTICES.

---

1. It is earnestly requested that Members of the Institution, who have not already paid their donation and subscription for 1873, will do so at their earliest convenience. Officers who may wish to become Members, are requested to be kind enough to forward their donations and subscriptions at the same time as they express a wish to join the Institution.
2. Members changing their residence are requested to give early intimation of the same to the Secretary at Simla, and also to the Corresponding Members (if any) of the Station they are leaving and going to.
- 3.—Members going to England are requested to give an address in India where their journal may be sent, and to note that their subscription is due on the 1st May in each year.
- 4.—Members are invited to become Corresponding Members at the different Stations. The duties of this office will be to collect subscriptions, forward papers, arrange about lectures and debates, and to communicate on general matters with the Council.
- 5.—The attention of those who intend to contribute to the journal is called to the Rules on the subject.
- 6.—Members who may be willing to give their services for the translation of papers on Military subjects from foreign languages, are requested to communicate with the Secretary naming the language which they offer to translate.
- 7.—The attention of those who are working out inventions of Military importance is called to the opportunity afforded by the Journal of the Institution of making their ideas known. All inventions forwarded for publication (subject to the approval of the Council) will be carefully illustrated and described.

The following is re-published for general information :—

### **Revised Regulations of the United Service Institution of India.**

- I.—The Institution shall be named “The United Service Institution of India.”
- II.—The design of the Institution shall be the promotion of Naval and Military Art, Science and Literature.
- III.—The proceedings of the Institution will embrace—
  1. The delivery of lectures at any station in India.
  2. Debates on Military subjects at any station in India.
  3. The publication of a journal, as often as practicable, containing (when procurable) matters arranged in the following order :—
    - (a) Original papers on Military subjects which the author is unable or unwilling to deliver in the form of a lecture.
    - (b) Reports of lectures with the discussion thereon.
    - (c) Reports of debates with the discussion thereon.
    - (d) Opinions of Members on matters published in former numbers.
    - (e) Selections from the records of the Military Department of India (by authority).

- (f) Translations from foreign works of Military interest, selected by the Council or sent by Members.
- (g) Short notes on professional subjects.
- (h) Notices of inventions of Military importance.
- (i) Correspondence on professional subjects.

V.—Composition—

1. The following shall be solicited to be Patron and Vice-Patrons respectively, ex-officio :—

PATRON :

His Excellency the Viceroy and Governor-General of India.

VICE-PATRONS :

His Excellency the Commander-in-Chief in India.

|   |   |                                      |
|---|---|--------------------------------------|
| " | " | of Madras.                           |
| " | " | of Bombay.                           |
| " | " | of Royal Navy on the Indian Station. |

2. Besides the above, Vice-Patrons shall be limited to members of the Royal Family, Officers distinguished for their services, and Members who have been benefactors to the Institution.
  3. All Officers of the Royal Navy and Army and of Volunteer Corps in India shall be entitled to become Members on payment of the entrance fee and annual subscription.
  4. Gentlemen, not included above, may become Members on the recommendation of two Members of the Institution, with the approval of the Council.
- V.—1. The Government of the Institution shall be vested in a Council at the Head-Quarters of the Army in India, to consist of not less than 12 Members or more than 24, to be, as generally as possible, representative of all branches of the Forces in India. The name of Officers, willing to serve on the Council for each ensuing year, shall be published at least one month before the election and all Members of the Institution, unable to attend, may record their votes for the Council by proxy.
2. One half of the Members of the Council shall go out annually by rotation, but all shall be eligible for re-election. Vacancies, occurring otherwise than by rotation, to be filled up provisionally by Council.
  3. Four Members of the Council will form a quorum, and the Senior Member will preside.
  4. Officers will be invited to become Corresponding Members, to forward the objects of the Institution, and to communicate with the Council.
  5. A Secretary shall be elected by the Council at the Head-Quarters of the Army in India for the purpose of (under the orders of the Council) keeping the accounts, editing the journal, and conducting correspondence, &c.
  6. The duties of the Council shall be to exercise a general control over the welfare and expenditure of the Institution, and to pass papers for publication.
  7. The Council shall frame such bye-laws, for the general conduct of the Institution, as may appear to them necessary, subject to confirmation by Members of the Institution at the next General Meeting.
  8. The accounts of the Institution shall be circulated annually for general information.
  9. Non-Commissioned Officers and Soldiers of the Army and Volunteer Corps shall, when practicable, be permitted to attend meetings to hear lectures, &c., and the introduction of a member shall be sufficient to admit non-subscribers for the same purpose.

10. Secretaries of Serjeants' Messes and of Regimental Libraries and Reading Rooms can obtain the Journal of the Institution by paying in advance the amount of the annual subscription for each copy required.
- VI.—An entrance fee of Rupees 5 shall be paid by Members on joining, and an annual subscription of Rupees 5 shall be paid in advance by the 1st of May each year.

---

## BYE-LAWS.

---

### Rules for Contributors to the Journal of the United Service Institution of India.

1. All papers must be written in a clear, legible hand, and only on one side of the paper.\* All plans must have a scale on them.
2. Contributors may write anonymously, if they prefer to do so.†
3. Unless the author expressly states at the end of his paper that he wishes it published complete or not at all, the Council will make such alterations in it as they deem necessary.
4. The Council do not undertake to authorise the publication of such papers as are passed, in the order which they may have been received.
5. Papers will be published if passed by any four of the Council.
6. Contributors will be supplied with a few copies of their papers, provided they apply for the same before it is in the Press.
7. Contributors are requested, in future, to append a 'nom de plume' to their papers, in order that they may be communicated with in the "Answers to Contributors."

---

### Rules for the Regulation of Meetings and Debates of the United Service Institution of India.

1. The subject of all lectures and debates must be submitted for the sanction of at least four members of the Council before they are held.
2. The Senior Member present, being an Officer of the Navy or Army, shall always officiate as Chairman at Meetings.
3. Speakers are requested to address their remarks to the Chairman, and not to the Meeting.
4. In the event of more than one Member rising to speak at the same time, the Chairman's decision as to who shall be heard first shall be final.
5. If called upon to do so by the Chairman a speaker shall at once sit down.
6. No remarks of a personal nature, or in any way subversive of discipline or harmony, will be permitted.
7. Speakers are requested to arrange for notes of their own speeches being taken.
8. No interruptions will be permitted during the reading of a paper, or the speech of another Member.

---

Special attention is directed to this rule, communications on both sides of the paper cannot be printed.

\* Suspended by a Resolution of the Council.

9. Meetings shall be broken up or adjourned only on the general vote of the Members present.

10. Non-Commissioned Officers and Soldiers of the Army, and Volunteer Corps shall, whenever practicable, be permitted to attend meetings to hear a lecture, and the introduction of a Member shall be sufficient to admit non-subscribers for the same purpose.

### LIST OF SUBJECTS ON WHICH PAPERS ARE DESIRED.

On the organisation of a Transport Department for the Army in India.

On the organization of an Intelligence Department for the Army in India.

On Military Telegraphy and Signalling adapted for service in India.

On the uses to which Troops, British and Native, can be put in aid of Government works.

On the organisation of Pioneer Companies in Infantry Regiments, and the more careful instruction of this branch in field works, etc.

On the future of Cavalry, as drawn from the teaching of the last three great wars.

On the distribution of the Army in India strategically considered.

On the defence of our N.-W. Frontier.

On the defence of our N.-E. Frontier.

On the Sanitary Condition of the Army in India, British and Indian.

On the defence of the Ports and Coasts of India.

On the system of Military Justice of our Army (British and Native).

On the practical education of Officers generally, especially of Staff Officers.

Notes on lessons taught by warfare in India, or against undisciplined enemies.

Reviews of Indian Campaigns with the lessons deducible therefrom.

On the conduct of operations among Mountains.

On the arming of the Native Army.

On the danger to, and aid derivable from, India in the event of a war with France, Russia, Prussia, or America.

Records of the History of Native Regiments, and of the services of British Regiments in India.

Memoirs of distinguished Native Soldiers.

Memoirs of distinguished Officers who have served in India.

On the possibility and advantage of inducing a large number of our time-expired British Soldiers to settle in India.

On the advantage to be derived from a system of appointing our Soldiers, European and Native, to the numerous posts under Government from which they are now debarred.

On the aid which might be derived in the event of rebellion in India from the organization of all British and Eurasian subjects as fighting men.

On the Military training of our Native Regiments.

Plans of operations of Campaigns in which the Army of India might be engaged whether within or beyond our frontier.



On the results which will probably follow from moving Troops, British and Native, in course of relief by rail instead of by route march.

On the advantages of fortified posts as shewn during the Mutiny.

Punka-pulling by machinery adapted to Barracks and Hospitals of European Troops.

On Regimental Workshops, Gardens, and Soldiers' Industrial Exhibitions.

On the formation of new cantonments, and the conditions under which Civilians should be permitted to purchase house property therein.

On the carriage of Regimental reserve of Breech-loading Ammunition in Mountain Warfare.

On Military Law as a branch of an Officer's Education.

On the uses of torpedoes in River and Coast defence in India.

On the advantages of practice against moving targets for Artillery and Infantry.

On the requirements of a force of, say, 20,000 men organised in India, for service in foreign parts, as regards Officers for staff employ with the force, and on the best means of supplying them under the present organisation of the Native Army.

On the best means of educating Native Officers, so as to bring them up to the requirements of the present day as regards military knowledge.

Critical accounts and reviews of the siege operations of Indian Campaigns.

The causes of the increase of crime in the Army in the hot season, and its remedy.

On the advantages and defects of the system of organisation of Artillery by Brigades.

On the Topography of the Military Districts of India in its relation to strategy.

On Fortification in India.

On Pontoons and Portable Bridges for Indian Service.

*N. B.*—This List is not meant to deter any one from writing on any other subject.

## NOTICE.

---

The Maps illustrating Lieut.-Colonel Newall's papers on "The Strategic Value of Cashmere" will be published with the next number.

H. THOMPSON, MAJOR,  
*Offg. Secretary U. S. I. of India.*

# ORIGINAL PAPERS.

## I.

### HISTORICAL RECORD

OF THE LATE 26TH REGIMENT BENGAL NATIVE (LIGHT) INFANTRY,  
*formerly 1st Battalion 13th Native Infantry.*

*Compiled from notes by the late Lieutenant General Sir William Richards, K. C. B., Colonel of the Regiment.*

THE 13th Regiment of Bengal Native Infantry was embodied at Chunar on the 27th of December 1797, Captain 1797. S. Jones took command of the 1st Battalion and Captain J. Tetby, of the 2nd. The corps was drilled by Captain Jones who commanded it till the beginning of June 1798, 1798. when Major Patrick Macdougall assumed the command, but being an invalid he rarely appeared on parade, and the drilling was left to Captain Jones, till about the 4th September 1798, when the corps was reviewed and brought on duty. Major Macdougall died at Chunar on the 9th September. At the same time volunteers were called to proceed to Madras to take part in the campaign against Tippoo Sahib. About 300 men volunteered from the 1st Battalion 13th Native Infantry and together with four officers (among whom were Lieutenant afterwards Lieut.-Colonel Weguelin, and Lieutenant afterwards Lieut.-General Sir William Richards, K.C.B., Colonel of the Regiment) left Chunar by water in the end of September and proceeded to Madras by sea. Shortly after this the corps moved to Benares and a company was engaged in quelling the disturbances occasioned by Vuzeer 14th Jany. 1799. Ali's rebellion and the massacre of Mr. Cherry and a number of European gentlemen. The company behaved very well and had four men wounded. The left wing of the corps now returned to Chunar while the right proceeded to Juanpore. The latter was at this time commanded by Major Forster; in December the left wing joined the right at Juanpore, and the corps marched to Goruckpore. In April 1801, the corps again moved to Captaingunge where Lieutenant Colonel Peregrine Powell joined and assumed the command. From this officer the corps acquired the name of "Poel-ka-Pultun." During the time it remained at Captaingunge detachments were continually ordered out, and a mud fort called "Bungowan" was besieged and reduced, though not before the arrival of a battering train from Benares 1801.

In November 1802 the corps marched to Allahabad where it arrived in the following month. From this place four companies were detached across the Jumna to the Rewah frontier, and a fifth to Atterbun under Lieutenant Richards.

In August the first Maharatta War broke out and the 1st Battalion 13th Native Infantry formed part of the detachment under the command of Colonel Powell, who

|       |                                 |                                         |
|-------|---------------------------------|-----------------------------------------|
| 1803. | 2nd Battalion 11th Native Infy. | was ordered to proceed into Bundelkund. |
|       | 1st do. 13th do.                | The detachment marched from Allah-      |
|       | 1st do. 18th do.                | abad on the 3rd September, and          |
|       | 2nd do. 18th do.                | crossed the Jumna at Shahpore           |
|       | 2 Squadrons Light Cavalry.      | Ghat on the 6th. Here a company         |
|       | Artillery.                      | was left under the command of Lieute-   |

nant Richards to secure the Ghat, and to wait the arrival of the siege train from Allahabad by water, which it was to escort to the camp. The force under Colonel Powell continued its march, and on the 14th entered the province of Bundelkund where it was joined by Rajah Himmudt Bahadur, one of the principal chieftains, with a force of 8,000 Irregular Infantry, 4,000 Horse, three regular battalions commanded by a European officer and twenty-five guns. Bundelkund had been recently ceded to the British Government by the Peshwa at the treaty of Bassein, but some of the Native chiefs at all times unruly, refused to acknowledge the cession, and prepared to resist it and assert their own independence. Among these was Shumshere Bahadur, who collected his troops along the river Kane which formed the boundary of his territory, to oppose the march of Colonel Powell's detachment. After the reduction of some small forts between the Jumna and the Kane, Colonel Powell accompanied by Himmudt Bahadur crossed the Kane and proceeded in search of Shumshere Bahadur. At half past 10 o'clock on the morning of the 12th, the allied force after a fatiguing march of six hours, over a very uneven country, came in sight of Shumshere's army drawn out in line of battle near Cupsah, about 11 miles north west of Banda, and their camp all struck. As their line which covered a great extent was advantageously posted, and appeared to be advancing, there was every expectation of a general action.

The British moved forward in column of battalions till within 1,200 yards of the enemy, when Colonel Powell deployed into line, and the enemy's batteries opened fire, which was replied to on our side, but suspended again, as the guns could not be advanced on the broken ground by the drag-ropes, and it was necessary to limber up. After an advance of another 500 yards they again opened with such effect, as quickly to silence the enemy's fire, and they began to retire with such rapidity that our Infantry could not overtake them. They were pursued, however, by Captain Webber with a squadron of Cavalry, and a galloper gun (a light piece at that time attached to the Cavalry,) and 500 of Himmudt Bahadur's Horse, and these overtook them about three miles on and inflicted considerable

1803.                      loss on a body of 1500 Horse, who attempted to cover their retreat. Our loss did not exceed ten killed and wounded, but among them was Captain Farley Smith, who was killed by the first shot fired by the enemy. The Rajah had seventeen men and sixteen horses killed and wounded. The loss of the enemy could not be ascertained, but the whole of their guns and baggage fell into our hands. Shumshere Bahadur fled across the Betwa, which falls into the Jumna below Humeerpoor. Colonel Powell moved towards Calpee, a town and fort on the Jumna near which he halted to await the arrival of his battering train, while Shumshere Bahadur opened negotiations in hope of delaying his progress. The train arrived at Shahpur ghaut towards the end of October and its disembarkation had commenced. One 18-pounder had been mounted on the opposite bank of the Jumna, and a guard of one havildar, one naick, and eight sepoys posted there for its protection; the rest of the boats and the party in charge of them being on the other bank of the river. On the morning of the 30th October the Havildar's guard was attacked by a strong body of Boondelas, who attempted to get possession of the gun. The havildar withdrew his men under the bank, and by allowing only half of them to fire at a time and with deliberate aim he succeeded in holding them in check till the arrival of Lieutenant Richards, with the rest of the company, and one of the Allahabad Provincial Battalion, which had joined him a few days before; these quickly attacked the enemy, and drove him back with loss. The party who attacked the gun were said to be 1200 strong under the command of five chiefs.

Colonel Powell on receiving the official report of the affair expressed himself highly gratified with the conduct of those engaged.

The detachment then escorted the battering train to the camp, where it arrived in safety on the 30th November. Colonel Powell now resumed offensive operations, and attacked Calpee, on the south bank of the Jumna. On the refusal of the killedar to surrender, a battery of two 18-pounders and one howitzer was constructed within two hundred yards of the fort, upon which a heavy fire was opened at daylight on the 4th December, with such effect that at 11 o'clock A.M. the garrison yielded; and were permitted to march out with their arms and private property. The only casualties attending this capture were Captain D. Macleod, 2nd Battalion 11th Native Infantry, and one sepoy wounded. The town was immediately occupied by a detachment of British troops to the great satisfaction of the inhabitants. On the 12th December Colonel Powell was joined by a brigade of Native Infantry having European officers, and commanded by an Englishman named "Shepherd," who quitted the service of Ambagee (under whose authority Scindeah had placed the province of Bundelkund,) conformably to a proclamation issued in August by the Governor General. This brigade was immediately taken into the pay of the British Government and employed with advantage by Colonel Powell in establishing and maintaining tranquillity, in the interior of Bundelkund where British Troops could not be conveniently employed.

This uninterrupted success of the British and the defection of his own troops and officers, reduced Shumshere Bahadur to sue for terms. These were granted to him on more favourable conditions than he had any right to expect, and Captain Baillie, who had succeeded Mr. Mercer, as Agent for the Governor General in the charge of the states south of the Jumna, was authorised to offer him an annuity of four lacs, which he

1804

thankfully accepted. On the 18th January 1804 he made his formal submission in the British camp, and this was speedily followed by the surrender of all the forts in the province held by his adherents. At the same time the Soubahdar of Jhansi visited the British camp and entered into a treaty, by which on condition of being secured in the possession of his territory he agreed to co-operate in the defence of Bundelcund, for which purpose he placed a considerable body of his troops at Colonel Powell's disposal. These with the brigade of Colonel Shepherd, were soon after detached to Jhansi to observe the movements of a large body of Mahratta Horse under Ameer Khan, who were hovering on the frontier of that district, with the

20th Feby 1804

evident design of invading it. A slight skirmish took place between these troops, but on the advance of Colonel Powell, Ameer Khan fell back upon Seronge, leaving the Colonel to complete the reduction of those fortified places, which had not yet submitted to the British Government. In this duty the force was engaged until the beginning of May 1804, when Colonel Powell was compelled by severe illness to leave the district. He was succeeded in the command by Lieutenant Colonel Polhill, but this officer dying almost immediately (9th May) the command devolved on Lieutenant Colonel Fawcett. The detachment was at this time encamped at Koonch, the capital of a small district of the same name, about 40 miles from Calpee. From this place a detachment, consisting of 7 companies of the 1st Battalion 18th Regiment Native Infantry under Captain Smith; a company of European Artillery under Captain Feade with two howitzers, two 12-pounder and one 16-pounder, and a troop of 8th Cavalry under Captain Jones, had been sent to reduce a small fort called Belah or Belawa about six miles south east of Koonch on the Calpee and Saugor road.

Trenches had been opened and the batteries had commenced breaching the place, when the Killadar sent out a proposition to surrender the place the next morning if the fire were suspended. This was agreed to, but in the interval the treacherous Killadar sent to Ameer Khan, who happened to be in the neighbourhood of the place with a large body of

22nd May.

Horse, upwards of 20,000, and who on the following morning (22nd May), suddenly fell upon the party in the trenches and pettah of the fort, consisting of two companies of the 18th Native Infantry and about 50 Artillerymen, and cut up the greater part of them with their officers Captain Feade and Lieutenant Morrice of the Artillery, and Lieutenant Gillespie and Assistant Surgeon Hooper, 18th Native Infantry. Captain Smith, with the remainder of the detachment and the gun bullocks, effected his retreat in safety, but the

whole of the guns, tumbrils, and stores were carried off by the enemy. On the first alarm the force under Colonel Fawcett at Koonch had turned out and got under arms, and had they moved immediately to the support of Captain Smith, the guns might probably have been saved ; but he contented himself by giving orders to the 1st Battalion 13th Native Infantry to march, and before it could leave camp a fresh report arriving that the enemy was coming down in force on the camp, it was countermanded and nothing was attempted. The force remained under arms till 2 o'clock when they moved to a new position about half a mile off. Here they halted for two days during which the troops were always under arms, and ready to move while their Commander remained in a state of most pitiable indecision. Such was his condition that he frequently applied to any officer near him for advice, how to act, no matter what might be their position or capacity. Among them happened to be one, who afterwards became celebrated, Joseph Hume, an Assistant Surgeon in the 18th Native Infantry, but who in addition to his medical duties held the appointments of Paymaster, Commissariat Agent, Postmaster and Persian Interpreter to the detachment, and not satisfied with even this plurality of offices, is said to have been seriously offended because he was refused the Chaplaincy of the 1st European Regiment, then serving with the force. In the present instance, however, he declined to advise Colonel Fawcett, on the ground of his not being a military man. On the 25th some intelligence was received of Ameer Khan's movements, and the Force moved out, but it proved false, and it again returned to Koonch. On the following day it was ascertained that Ameer Khan was moving toward the Jumna, in the hope of being able to cross it and invade the Dooab, and Colonel Fawcett marched on the morning of the 27th in pursuit of him.

It seemed, however, as if every step of this unlucky officer was to be attended with disaster and misfortune. The order of  
 27th May. march had been given "by the right," but the troops by mistake moved off "by the left," and the whole of the baggage was consequently on the wrong flank of the column. The road lay through the mango topes skirting the town of Koonch, and in these were encamped the Irregular Cavalry of the Native Chiefs attending the British Camp. A party of these were mistaken for the enemy by the flanking parties of the advanced guard who opened fire upon them. In the confusion the Infantry corps in the rear lost their way, and got ahead ; and upon the shots of the advanced guard coming in on them, they returned it with one of their six pounders (two of which were at that time attached to each regiment), several rounds were fired and it was not until a number of camp followers were killed and wounded, that the error was discovered ; fortunately none of the troops were hurt though some sick officers had a narrow escape. The force at length emerged on the open plain where it was reformed and again moved on. Instead however of continuing his march to Calpee, which was threatened, Colonel Fawcett now abandoned the pursuit of Ameer Khan and commenced a retreat towards the Betwa river. The next morning he reached

the Fort of Bursar, where he might successfully have resisted  
 1804, May 28th. Ameer Khan and his horde ; he preferred to put the

Betwa between himself and them, and pushed on to Kunchour Ghat altogether about 21 miles, through a country intersected by ravines and without a drop of water. So exhausted were the troops by this march that the 1st European Regiment, which formed part of the Force, buried no less than four officers and fifty men before the next morning, and the deaths among the camp followers amounted to nearly 300. The native troops appear to have suffered little; the 1st Battalion 13th Regiment only losing one Havildar. The force halted here a day and then proceeded to Calpee, which had been attacked two days before by Ameer Khan but without success as it was gallantly defended by two companies of Sepoys under Captain Jones; and shortly afterwards he fell in with Colonel Shepherd, who inflicted on him a severe defeat and compelled him again to withdraw to the south out of Bundelkund.

Colonel Fawcett was immediately superseded by Colonel Frith, who shortly afterwards made over command of the Force to Colonel Martindell under whom it remained for some time at Calpee, but it was now much reduced in strength by the transfer of the 1st European Regiment to Cawnpore to join the grand army under Lord Lake.

About the middle of June intelligence was received that a large body of Bundeelas and Nagas under the Ram Rajah, had taken up a position close to the town of Mahoba, about twenty-eight miles south-west from Bandah, from whence the two native brigades of Meer Kuttub Ali and Mahomed Jeman Khan (which had lately been taken into our service) were unable to expel them. The British force at Calpee (consisting of the 1st battalion 13th, and 1st and 2nd Battalions 18th Native Infantry and four troops of Native Cavalry with two brass 12-pounders, and the 6-pounders attached to the corps) accordingly marched on the 23rd June to attack them. It arrived at Mahoba on the 2nd July and found the enemy strongly posted on a ridge of rocky hills behind the town. No time was lost in attacking them, and the Infantry ascending the hill quickly drove them from every point, in spite

Action at Mahoba 2nd July 1804.

of the heavy fire from the enemy's matchlock and rocket men, while the Cavalry under Captain Webber swept round its base and charged and dispersed a large body of predatory Horse, taking their colours together with the religious standard of the Nagas. The enemy were entirely routed, with a loss of 450 men besides their camp, baggage, horses, camels and stores of every kind. The loss on the British side was trifling, the 1st Battalion 13th had only two men slightly wounded. From thence the force marched toward the Fort of Jeitpore about 20 miles west of Mahoba. The want of stores and battering guns prevented any regular operations for reducing it, it was therefore determined to attempt it by escalade at night on the 28th July. Night attacks are proverbially unfortunate and the present instance was no exception. The storming party consisted of the six Grenadier companies of the 1st Battalion 13th and 1st and 2nd



Attack on Jeit-  
pore, 28th July.

Battalions 18th Native Infantry, under the command of Captain Hay (18th Native Infantry), and after a march of a mile and a half along the ridge of the hill they reached the point of attack. In the darkness however the exact spot previously selected could not be discovered, and the ladders were applied to a part of the wall considerably higher than that for which they were intended, and were consequently much too short, and after remaining under fire upwards of two hours, the party was compelled to retire with a loss of 14 men killed and 49 wounded. The two companies of the 1st Battalion 13th had 34 casualties out of a total of 140 men. The Force now moved its camp, and a battering train was sent for, the fort being closely blockaded until its arrival; when on the 20th August the siege was commenced, and after eight days of open trenches, during which not a man or officer was off duty for 24 hours the place surrendered. Though the troops had been much harassed during the siege, there had been little or no sickness, but it was hardly ended before it broke out. The detachment commenced its march to return to Calpee on the 8th September with about 200 sick, and by the 16th the number had increased to 2,500 men, leaving barely a sufficient strength for the duties of the camp. The detachment remained at Calpee till the end of the cold season of 1804-5; for the active duties of the campaign were now over; but its services were still required as a corps of observation, and in March 1805 it again moved westward, following and watching closely a large body of Maharattas under Scindeah, who after the reduction of Saugor, had advanced towards the British frontier on the Chumbul. On the 5th April the Force reached Jettore, a small village near that river and not far from Dholpore. Scindeah's army lay encamped at Sabulghur, about 30 miles west, and in this position they remained until the arrival of the army under the Commander-in-Chief, General Lake, when Scindeah precipitately retreated in the direction of Kotah. On the 3rd of May the Bundelkund Force was inspected by the Commander-in-Chief, who expressed great satisfaction with its appearance and discipline. On the 30th the Army broke up, and the Bundelkhund force marched to Gwalior and thence to Jhansi, where it remained till the commencement of the cold weather when it returned to Koonch.

Early in 1806, it again marched to Bandah and thence to Goorha, about 12 miles from Kallinger, and it remained here till the Force was broken up in December, when the 1st Battalion 13th Native Infantry commenced its march to Bareilly. At this place the corps remained till October 1807, when it was ordered to join the force collected for the reduction of Kamonah, a small mud Fort in the Dooab about 15 miles north of Alighur. It is unnecessary to detail the circumstances which occasioned these operations, which originated principally in the refusal of a refractory Zemindar, Doondeah Khan, to dismantle the forts he held in the territory newly ceded to the British Government. He was encouraged in this resistance by the impression prevalent throughout India at that time, of the inefficiency of guns firing solid shot only to breach works built of mud or sun-dried

brick and the recent failure at Bhurtpore had no doubt exaggerated this impression, although that failure was probably more attributable to the difficulty of crossing the wet ditch. Howitzers it is true formed part of our Artillery equipment, but at ranges exceeding 500 yards, the shells did not penetrate deeply, or the fuzes were extinguished, and the supply of shells was generally inadequate ; and in fact it was not till 13 years later at the attack of the Mocha forts in 1820, that shells were systematically employed for breaching, by Colonel W. Jacob of the Bombay Artillery.

In the present instance the fort was insignificant, and nothing but extreme obstinacy could have induced a petty zemindar to defy the British power ; but the defence was spirited and entailed such a disproportionate loss on our troops that it may be worth while to describe the operations with more detail than we have hitherto attempted.

|                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>The 1st Battalion 13th Native Infantry under Major Nangreave</p> <p>Oct. 14th, 1807.</p> <p>3 Field Officers.<br/>3 Captains.<br/>14 Subalterns.<br/>3 Staff.<br/>22 Native Officers.<br/>49 „ Non-comd. Officers.<br/>19 Drummers.<br/>832 Rank and File.<br/>945 Total.</p> | <p>joined the force at Kamouah, on the 14th October ; its strength on that day is given in the margin, and offers a marked contrast in the proportion of officers to men, to that of corps proceeding on service in the present day. The total strength of the force on the same date was 6761 combatants, with a battering train of ten pieces, independent of the battalion guns then attached to regiments. The fort was small and of no great strength, differing little in construction from ordinary mud forts, and entirely without bomb proof cover.</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

It had however lately been put into a good state of defence, which was in fact the “ casus belli ;” and advantage had been taken of a large garden about 360 yards from it, which had been fortified with a rampart and ditch, and connected with the fort by a trench or covert way well protected with a parapet on each side. Ground was broken on the 19th, and on that and the two following nights breaching batteries were erected against the south and west fronts. On the 22nd the enemy made a sortie and were in possession of the batteries for a short time, but not sufficiently long to do them much injury. On the next morning the fire was opened, and the inner fort was speedily breached. By the 27th all the exposed portions of the works on these sides were in ruins, but it was not until the 30th that the breaches were reported practicable, but the scarp of the “ fausse braie,” or “ rownie” as it is termed by the natives of India, still remained untouched ; and as it was well covered by the glacis it was necessary to blow in the counterscarp to allow the guns to direct their fire upon it. Mining operations were accordingly commenced, and as the soil was very sandy the work proceeded but slowly, and was successfully opposed by the enemy, who on several occasions injured the galleries so much by countermines as to cause considerable delay ; and at length on the 22nd of November broke into

and fairly drove the besiegers out of them. At length however on the 17th, though not before every officer of the Engineers had been killed or disabled, the works were sufficiently advanced to admit of the assault  
1807.

being given and orders were accordingly issued. Five companies of the 17th Foot under Colonel Hardyman, the Grenadier Battalion under Captain Drummond and the six Grenadier companies of the 1st Brigade under Major Nangreave, were detailed for the storming party. A column of 800 men under Colonel Duff were told off for a simultaneous attack on the garden, and the 1st battalion 13th Regiment was ordered to support the stormers as a covering party. The assault commenced at 2-30 P. M. on the 18th, but on the troops reaching the crest of the glacis it was found that the whole of the bottom of the ditch and the slope of the breach were covered with straw, which being set on fire and communicating with "fougasses" previously prepared by the enemy rendered it impossible for any one to reach the breach, while the troops remained on the glacis exposed to the whole fire of the enemy. When the blaze had subsided the storming party attempted to advance but they were now assailed by numerous bags, balls, and pots filled with powder, which falling on the burning embers took fire and exploded immediately.

A considerable body however, succeeded in reaching the top of the breach but here they were received by the enemy with long spears, who prevented their collecting in sufficient force to effect an entrance. At length after a struggle of nearly two hours, the troops were recalled and retreated into the trenches, and the attack on the garden being also unsuccessful from the ladders proving too short the fire was suspended and the troops withdrawn to camp. The 1st Battn. 13th N. I. was employed in covering the retreat of the storming party and bringing off such of the wounded as could be removed; the rest were sent out by the enemy on the following morning. The loss was enormous, considering the insignificance of the place; but certainly not more than was due to the energy and skill displayed by the enemy in defence of the breach. Nine European officers and ninety-six men were killed, and eighteen officers and four hundred and eighty-three men wounded, Colonel Duff who led the attack on the garden being among the former. Preparations were made for renewing the attack but the garrison as frequently happens in India, after an unexpected success, lost heart and evacuated the place on the 2nd November.

On the 22nd the force marched to Gunnowrie, another small fort belonging to the same zemindar, leaving the 1st Battalion 9th Native Infantry in garrison at Kamona. This fort resembled Kamona in plan but it was without out-works and the scarps were not so well covered.

Trenches were opened on the 23rd, and on the 6th December the breaching batteries opened fire, but before they had made much progress, the heavy fire of shells kept up on the fort, compelled the enemy to evacuate it on the night of the 11th December, and it was immediately taken possession of by the British troops without the loss of a man

1808. Both forts were destroyed and the detachment being broken up, the 1st battalion 13th Native Infantry marched to Muttra and remained there till November 1808, when it marched to Seharunpore under command of Captain Richards, Major Nangreave, the former commandant having gone to England. In November 1809 it again marched to Rewaree. In April 1810 Lieutenant Colonel Reade joined and assumed the command at Delhi, where the battalion was ordered on duty and where it remained till October 1811.

From Delhi a company of volunteers under Lieutenant D'Aguilar, was sent to Barrackpore to join the expedition to Java. They were absent for three years and served with credit at Palembang, and other places, and received the "Java" medal which was worn by one or two of the survivors, who were old Subadars some forty years later. The battalion remained at Delhi till October 1811 when it marched to

1812. Loodiana. Here it was stationed for a year, and then proceeded to Bareilly, and after remaining there two years it again moved to Moradabad in October 1814. In May 1813 Colonel Reade left the corps which was commanded by Major W. Richards, till the arrival of Lieutenant Colonel Grant in August 1814, who had been appointed to command it. At this period the rupture with the Goorkhas took place. These hardy mountaineers had for a long time indulged in raids and depredations on our frontier, in spite of all remonstrance, and at length their insolence rose to such a pitch that it was decided to repress it by the strong hand. The frontier line upon which it was proposed to operate measured not less

1814. than six hundred miles from east to west, and consisted in addition to the Terai and saul forests, of a collection of mountain ridges, intersected here and there by narrow valleys and rugged defiles. Lord Moira determined to invade it on four points simultaneously.

For this purpose four separate divisions of troops were assembled. The left or Loodianah division was commanded by General Ochterlony. It consisted of about 6,000 men and thirty guns, and it was destined to occupy the hill country overlooking the Sutledge. The left centre column assembled at Seharunpore under General Sir Rollo Gillespie, commanding the Meerut division. It consisted of about 3,500 and fourteen guns, and was directed to move on the passes of the Sewalik range into the Deyrah Dhoon, and after subduing that valley was to threaten Gurhwal and Srinugger, and especially Nahun, a town of some importance west of the Jumna. Attached to this division were about 6000 Irregulars of various classes raised by Mr. Fraser, First Assistant to the Resident at Delhi, which were embodied and placed under the command of Lieutenant F. Young,\* to whose particular fitness for this charge

---

\* The present General F. Young, Bengal Infantry.

the Governor General afforded his personal testimony. The right centre column under General Wood was assembled at Goruckpore, with the design of re-establishing British authority in the districts of Bootwal and Sheoraj, the usurpation of which by the Nepalese was one of the principal causes of the war, and eventually of penetrating through them into the province of Palpa, it consisted of about 5000 Regular troops and 15 guns with a body of 900 Irregulars. The Right Column which was in fact the main attack, though not greatly superior in strength to the others, was composed of about 8,000 men with 26 guns, and was assembled at Dinapore under Major General Marley, who received instructions to force the passes between the Gunduk and the Bagmutty Rivers, and to march as directly as practicable on the capital Khatmandoo. These four grand columns were to be supported and connected, here and there, by demonstrations and occasional inroads from lesser corps, of which one, a column of 2,000 men under Major Latter, was prepared to open a communication with the Rajah of Sikkhim, and to act with him in protecting our Eastern Frontier, and clearing the hills of all such posts as the Goorkhas might have established along them.

It was to the second of the columns we have detailed, that under General Gillespie, that the 1st Battalion 13th Regiment Native Infantry was attached; but it was not until the very day of the

31st October. unsuccessful assault on Kalunga, in which that gallant soldier lost his life, that the regiment commenced its march from Moradabad under the command of Major Richards, Colonel Grant being prevented by illness from proceeding with it. It arrived at Deyrah early in November, and joined the head quarters of the Division, the command of which on the death of General Gillespie had devolved on Colonel Mawbey, Her Majesty's 53rd Regiment, and which had fallen back to this place to await the arrival of a battering train. This was not received until the 24th when the Force again ad-

24th November. vanced to its former ground, and preparations were made for a renewed attack. The 1st Battalion 13th Native Infantry, with detachments from other corps, occupied the hill on which the batteries had been situated in the former attack. Here fresh works were thrown up, and the guns opened on the 25th. Their fire was maintained the following day, and on the 27th at one o'clock

27th Novr. the breach was reported practicable, and Colonel Mawbey issued orders for the assault. The two Grenadier companies of the Battalion consisting of 160 men, formed part of the storming party. The troops, encouraged by their success in repelling a sortie which Bulbudder Sing, the Goorkha Commander had attempted in the morning, advanced steadily under a heavy fire, and rapidly ascended the breach.

Here, however, they were stopped; for at the foot of the inner slope of the rampart, the besieged had dug a broad deep trench, thickly planted with sharp pointed stakes and bamboos, to descend upon which would have proved the certain destruction of those who attempted it, while from stockades on each flank the enemy literally swept away the

head of the column crowded on the summit of the breach. For two hours the troops maintained the contest, but at length finding success hopeless Colonel Mawbey ordered them to retire. The loss was enormous, when is considered that the garrison as was afterwards ascertained were reduced to barely 70 men, out of 600, who formed its original strength. The 1st Battalion 13th N. I. had one officer Lieut. Cunningham killed and one, Capt. Blake wounded, with 35 men killed and wounded.

The Governor General expressed much discontent and surprise at this second failure to carry a place (to use his own words) certainly of no great strength or extent, destitute of a ditch and defended by a garrison whose only means of resistance consisted in their gallantry; but whilst some weight must be allowed to the circumstances enumerated by Lord Moira, a portion of his implied censure may be more probably attributed to the feeling of disappointment at the repeated reverses which thus marked the commencement of a campaign on the plan of which he had bestowed so much thought, and to the success of which his own reputation was essentially committed.

Unable to reduce the place by assault Colonel Mawbey now concentrated the fire of his artillery upon it, and vented on it the full fury of bombardment. This was not without effect, and after sustaining a tremendous fire for three days the garrison, greatly reduced in numbers, in want of food and water, and in danger of pestilence from the accumulation of their dead, were compelled to evacuate the fort under cover of night on the 30th of November. It was immediately taken possession of by Colonel Mawbey. The scene within was appalling, and bore ample testimony to the desperate spirit which had animated the defenders. Their fortune without the walls was not however happier than it had been within. Their flight was not long concealed and a party under the command of Major Ludlow was despatched in pursuit of them. He came up with them just after they had joined a body of 300 Goorkhas, who had been sent to reinforce Kalunga, and who had been hovering about the hills waiting for an opportunity to enter the place.

Major Ludlow attacked them while bivouacked in an advantageous position, and succeeded in dispersing the force, and killing and making prisoners of the greater part of the fugitive garrison. Having levelled with the ground what remained of the works at Kalunga, the British force now proceeded to occupy a position above the town of Calsie which had been strongly stockaded by the enemy, but was abandoned by them after a feeble resistance, as well as the strong post of Baraut situated in the mountains forming the N. E. boundary of the Deyrah Valley. These posts together with that of Luckerghaut on the Ganges, which was also in the hands of a British detachment, secured the possession of the Dhoon, and leaving a sufficient force to occupy them and the passes leading into it, Colonel Mawbey again moved forward on the 5th December towards Nahun. On the 19th, he encamped at Mogaraud within 7 miles of the town, which was at

this time occupied by about 300 of the enemy under Runjoor Sing, the son of Ameer Singh Thappa. Arrangements were made for attacking the place with as little delay as possible, but on the morning of the 20th, General Martindell, who had been appointed to succeed General Sir R. Gillespie arrived in camp, and assumed the command, and Runjoor Sing mistrusting the strength of his position abandoned all the town and withdrew to Jytuk.

*( To be continued. )*

---





## II.

IMPROVEMENT OF THE PENSION RULES OF THE NATIVE  
ARMY—DISCHARGE OF NATIVE SOLDIERS—AND ABOLITION OF ANNUAL INVALIDING COMMITTEES.

THE above subject is one which is worthy of consideration, indeed it is one which I have long felt imperatively demands attention, as being connected so deeply with the contentment and efficiency of the native army; my experience of many years leads me to regard the present pension rules as a failure. The discharge of native soldiers, and the present regulations for annual invaliding committees equally so; I am very certain that to a great extent they tend to encourage malingering; they cause great dissatisfaction throughout all ranks, and they seriously affect the efficiency of a regiment by men incapacitated from age and debility being retained, and I am also very sure that they keep the most soldierlike race from enlisting.

In my own regiment when originally raised, a man enlisted for five years, at the end of which time if he elected for discharge, he received it. If he wished to remain for a further period of five years, it entirely depended on his character and efficiency as to whether his Commanding Officer accepted his services. There was no pension, no gratuity, and never was a service more popular, as proved by the number of "Oomedwars," always ready for any vacancy; such a thing as a recruiting party in those days was unknown,

Let me however fairly record that the above system, though so popular with the men, had its disadvantages; inasmuch as by the time a sepoy had become an efficient and thoroughly drilled soldier, he had little more than half his service to run, and the number of recruits at drill, and men hardly fit to take the field, was unusually large.

But a change came o'er the scene, and good and faithful service in the field when a regiment, true to its colors and the Government it served, was the exception in those days, induced the Government, ever ready to recognise meritorious service, to reward the regiment I refer to with all the privileges of the pension rules, transferring it at the same time to the line. Even at that period knowing the class of men it was intended to reward, and to draw if possible into a more binding contract with the state, I urged the advantage of admitting the regiment to the benefit of the pension rules, but earnestly deprecated forcing on the men the *enlistment for life* system. I opined it would prove distasteful to them, and prejudicial to the efficiency of the corps.

To introduce in those days a healthier system was no easy matter, and according to regulations was the change carried out: the option however being given to all men to take their discharge on the expiration of the term for which they had enlisted, or in accepting the pension rules, take the oath for life service. The very cream of the regiment

upwards of 400, accepted the former offer; all entreaties and argument, pointing out the advantage of the pension in their old age being so much waste of breath, the state losing as fine a body of soldiers as it has ever been my fortune to see. The utmost persuasion of myself and officers alone retained the remaining portion. Could more ample proof have been desired to shew the correctness of the opinion I had formed? I had obeyed the order, though it well nigh broke my heart.

Though a comparatively young soldier in those days, the responsibility of command had early devolved on me, and it could not but induce me to ponder over what appeared such an extraordinary antipathy on the part of the men to the pension regulations, which ensured a provision for old age; but the rapid diminution of "Oomedwars, the necessity of sending out recruiting parties, all tended to show that at all events those "most deeply interested" did not regard them in the same beneficial light; ten or twelve years additional experience in the working of these rules, and the system of annual invaliding have shewn to me beyond a doubt how ill adapted they are to carry out the intentions of a beneficent Government. "Six years ago I officially recorded that "enlistment for life" was the ruin of my regiment, and I believed the bane of the Native Army. I am more than ever confirmed in that opinion, and am impressed with the necessity for reform.

I would now submit for consideration a remedy, which would be merely a combination of the original limited enlistment system, but with gratuity or pension regulations, under some such arrangement as follows.

Let all men be enlisted for a period of ten years, at the expiration of that time let the option, to good and efficient men only, be given of a further period of five years, those who elect for discharge, those whom it may not be considered desirable to retain, to be discharged with a gratuity of six months pay. After completion of fifteen years service, the same arrangement as above, but with twelve months pay as gratuity. Any man however, in the opinion of the Commandant and his Medical Officer physically unfit, to be pensioned on 3-5th of the present rates. After twenty years service precisely the same course, but with eighteen months pay as gratuity, and 4-5th the present rate of pension if physically, unfit.

After twenty-five years the full pension as at present laid down "fit" or, "unfit" if asked for.

All annual invaliding committees I would abolish, they are destructive to the efficiency of a corps, while the principle of the system I propose will make the commandant and his medical officer wholly and solely responsible that their regiment is fit to march at a moment's notice, which I can unhesitatingly say is not the case at present.

It would in cases be found from 6 to 10 per cent. of the men would be unequal to the hardships of an Abyssinian or indeed any cam-

paign. I may be wrong in the ratio I have fixed, that is a question which I have not sufficiently studied as not being in my line. I am only desirous of endeavouring to the best of my abilities to point out what experience has shewn me to be a faulty system, giving the principles of what I feel convinced would be an improvement, and trusting that more able writers than I am may be induced to take up their pen on a subject so deeply interesting to the native army.

If I am not mistaken there are many who have served in that noble service, the old Punjab Irregular Force, who can give much valuable information on the working of the limited service, *versus* enlistment for life system, and I hope those who can do so, will not be backward in coming forward.

The contentment and efficiency of the native army is a vital subject to the Government we serve, for depend upon it, as the education of India progresses, expensive armaments must decrease, the enormous expenditure of our European Forces must be reduced, rendering it more necessary than ever, that our native army by increased efficiency in *all respects*, may be equal to the duties which I am assured must ultimately devolve on it.

"Fidelis et constans," must be its motto, and any lover of the old service, (and I trust there are still many,) who can aid the Government in bringing about that happy consummation should cheerfully give the subject his thoughtful consideration.

The United Service Institution of India "has happily been a great success, and the organisers of it have earned the gratitude of the Army; it freely invites all to co-operate, I may say in the instruction of the army, let that invitation be freely accepted,—it will tend much to rouse the zeal and the *esprit de corps* which formerly existed, and which has so sadly waned of late. The Native army has a brilliant future—make it a contented service—disciplined, efficient, above all things *well armed, and properly officered*, and it will yet be a glorious service.

H. BEVILLE, LIEUTENANT COLONEL,  
*Commandant 1st Belooch Regiment.*

12th June 1873.



## III.

## THE MORSE CODE.

ALTHOUGH the subject of army signalling has been commented on at considerable length in recent numbers of the proceedings, I venture to hope the following brief remarks will be considered of sufficient interest to justify their insertion.

There are doubtless many officers in isolated positions who would be glad to acquaint themselves with a system of signalling, now so extensively used, and it is more especially for their information that I am induced to forward you a list of the signals generally adopted by Telegraph administrations and found sufficiently copious to meet all the exigencies of the service.

In the list of combinations recently given by Captain Hennell, I recognise signals, which have evidently been taken from the old double needle alphabet. In the telegraphic world these have long since been obsolete, everything unnecessary having been weeded out of the list of recognised signals. For commercial or military purposes it must be obvious that the greater the simplicity the better the system; and I would not only strongly support Captain Hennell's suggestion "that only those signals embraced in the Morse Code should be retained for use in the army," but point out the advisability of adopting precisely the same regulations in the Navy. Every letter and figure is represented in what is commonly known as the "Morse alphabet" so that Marryat signals and those of the Commercial Code can be telegraphed without the assistance of any other alphabetical combination; or if preferred the sentence could be signalled in full without reference to the book.

Brief examples are given for the purpose of shewing the manner of signalling a despatch—it is of course perfectly optional to depart from this form of procedure, but having once decided in what order the preamble and address of a message shall be telegraphed, the rule should be strictly adhered to and the telegram forms printed accordingly.

MORSE TELEGRAPH CODE.

| LETTERS.    | FIGURES.                | PUNCTUATION.                            |
|-------------|-------------------------|-----------------------------------------|
| a ---       | 1 - - - - -             | Full stop [.] - - - - -                 |
| b - - - -   | 2 - - - - -             | Comma [,] - - - - -                     |
| c - - - - - | 3 - - - - -             | Note of interrogation                   |
| h - - - - - | 4 - - - - -             | [?]- - - - -                            |
| d - - -     | 5 - - - - -             | Note of Admiration                      |
| e -         | 6 - - - - -             | [!]- - - - -                            |
| f - - - -   | 7 - - - - -             | Inverted commas[""]- - - - -            |
| g - - - -   | 8 - - - - -             | <u>under line</u> - - - - -             |
| h - - - -   | 9 - - - - -             |                                         |
| i - -       | 0 - - - - -             |                                         |
| j - - - - - |                         | Code Signals.                           |
| k - - - -   | Bar of division used to |                                         |
| l - - - -   | express fractions.      | Call signal - - - - -                   |
| m - - - -   | - - - - -               | Erasure - - - - -                       |
| n - - -     |                         | Wait - - - - -                          |
| o - - - -   | Abbreviated Figures.    | Understand - - - - -                    |
| p - - - - - | 1 - - -                 | Termination of Correspondence - - - - - |
| q - - - - - | 2 - - -                 |                                         |
| r - - - -   | 3 - - -                 |                                         |
| s - - -     | 4 - - - -               | Useful abbreviations.                   |
| t - -       | 5 - or - - - -          |                                         |
| u - - - -   | 6 - - - - -             | Rt for right                            |
| v - - - -   | 7 - - - -               | Gd for good                             |
| w - - - -   | 8 - - - -               | Sigs for Signals                        |
| x - - - - - | 9 - - -                 | Tks for thanks                          |
| y - - - - - | 0 - - -                 | R, U for are you                        |
| z - - - - - |                         | G for go on                             |
|             | Bar of Division.        | G G G for send faster                   |

The foregoing code is similar to that published in the proceedings of the Rome Telegraph convention; it contains all the most useful signals now used by Telegraphists throughout the world, but omits a few rendered necessary by the French and German accented letters—these forms have been dispensed with in order to simplify the code as much as possible.

Other alphabets have been constructed on similar principles, but nearly every one of these codes have been superseded by the Morse which is decidedly superior to that at one time extensively used with the Bain's Telegraph.

In theory the bar is supposed to be three times the length of the dot, but inexperienced clerks usually make a much greater distinction—such signalling although not so elegant in appearance when recorded on the paper tape of an Electric Telegraph Instrument, is if anything rather easier to read when communication is being carried on by the Heliograph or night signalling lamps with which the dots and bars are represented by short and long flashes.

The Morse Code is now used in connection with the following systems.

The single needle Electric Telegraph—this is a simple and most useful instrument when only one wire is available, and it is necessary that several stations shall be in circuit; according as positive or negative currents are transmitted through the line the needles at the different stations are deflected to the right or left; if to the former it is equivalent to a dash and if to the left, a dot; at the conclusion of a word the receiver signifies “understood” by deflecting the needle, once to the right, or “not understood” by a deflection to the left.

The Atlantic Telegraph Companies use Sir William Thomson's Mirror Galvanometer, an extremely sensitive instrument with which the signals are read from the deflections of a spot of light to the right or left of a zero marked on a scale about three feet in front of the Galvanometer.

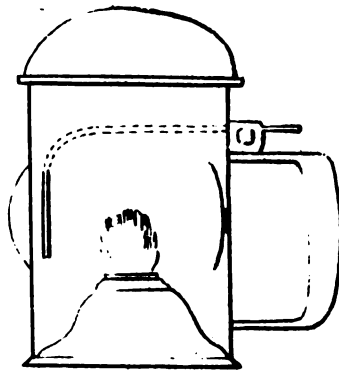
The easiest system to learn and the one most extensively used throughout the world is the Morse printing Telegraph, the dots and bars composing the alphabet are recorded on a paper tape which is drawn slowly by clock-work over the point of a stile or marker. This marker is forced against the tape by the depression of an armature which is attracted by the core of an Electro magnet, under the control of the distant sender who transmits long or short currents at pleasure—if the armature is attracted for a moment only a dot is the result, but if the current is sustained for an appreciable time a longer mark is recorded equivalent to a dash; while receiving the clerk keeps the clock-work running, so that the sender by transmitting long or short currents can imprint at pleasure on the tape of the receiving instrument any combination of dots or dashes required to form the various letters.

The simplest form of the Morse instrument is the “Sounder,” in which the tape, clock-work and printer is dispensed with; the armature

electro magnet and sending key only being retained. The fact may not be generally known but it is far more difficult to deceive the ear than the eye ; by listening attentively to the clicking of the armature while a message is being received it will soon be observed that there is a slight difference between the sound of a dot and dash ; the latter is more pronounced and after long practice it is quite easy to distinguish between them even when the signalling is very fast. I have no doubt there are dozens of signallers employed on the Telegraph lines in India competent to receive by sound more than twenty words per minute writing them down at the same time word for word without any assistance. This instrument is very useful for line work.

In "Bright's Bell Electric Telegraph" two bells are placed within the reach of a needle the deflection of which to the right or left produces two tones, the shrillest answering to a dot and the deeper to a dash—very high speed is attained with this modification of the single needle Telegraph and the assistance of a writer can be dispensed with.

With "Bolton's Flashing signals" for night signalling, the dots and dashes are represented by short and long flashes ; the range of this instrument depends entirely on the power of the light employed. For short distances a small lamp with the key arranged so as to shew the light when pressed with the thumb is very convenient, as it can be held at arm's length and only requires one hand to manage it.



The Heliograph flashes are produced by reflected sunlight which is directed exactly on the distant station ; by slightly altering the angle of the mirror the flash disappears altogether, but can be made to reappear at pleasure by pressing the key of the instrument. The extreme range of the Heliograph has not yet been decided, but 35 miles have been worked over with ease.



The attention of learners should be called to the fact that the number of signals in any *letter* never exceeds four, while each figure is composed of five elements and every mark of punctuation of six.

The Bar of division is used to denote fractions, thus  $\frac{1}{2}$  would be transmitted — — — — — to denote fractions, thus  $\frac{1}{2}$  would be This signal although constantly employed in Commercial Telegraphy would probably not be required in military signalling.

The use of abbreviations in repeating back messages is quite optional, but a considerable saving of time is effected when long despatches are telegraphed entirely in figures; learners and inexperienced clerks should always repeat their figures in full.

The note of interrogation is equivalent to "please repeat;" it is very extensively used and more especially by learners.

The signal - - - - - must precede and follow the sentence placed between the inverted commas.

The underline- - — - — is signalled both before and after the

word or words underlined. This signal is formed by a combination of the letters *unt.* an abbreviation of the German *unterlinirt*.

The manner of signalling the underline and inverted commas is shewn in the following example:—

The gunboat “Clyde” must *not* be detained.

-----  
-----  
-----  
-----

The call signal is used when trying to gain the attention of a station, but if more than one office is in circuit, or more than one station or ship is in view; some signal to distinguish the station wanted should be given and the code of the station calling should be signalled at the end.

It is customary to insert the letter V between two codes, thus if station A were calling station B, the call would be something similar to the following:—

-----  
-----

no interference would then be offered by any other station and B should reply -----

The “erasure” is merely a succession of dots, any number over half a dozen will do. Sometimes the call signal is used as an erasure or a series of “understands,” just to keep the circuit occupied while the sender is collecting his thoughts, or endeavouring to decipher indifferent writing; when recommencing after a pause of this description it is usual to begin with the last correct word.

• The “wait” signal requires no explanation.

The “understand” signal is extensively used; if after receiving a message or sentence the distant station gives it, it should imply that he has received the message all right. The signaller at the distant station will probably preface any remarks he may have to make with a call signal or one or two “understands,” in order to give the receiver time to prepare for their receipt; and at the end of his message he should conclude with a full stop, an “understand,” the signal or note of interrogation, to shew that he has finished and is awaiting your reply.

The Termination of Correspondence signal ----- signifies that there is work on hand, and that you have nothing further to say. It is advisable to exchange this signal occasionally with the most distant station, if the circuit is not otherwise employed, in order to see that communication is perfect, and that the signallers are not neglecting their duties.

The few abbreviations given are very generally used by English

Telegraphists; others are adopted by different administrations to suit the exigencies of the service, and most official titles have a code equivalent of not more than two letters. The signal G for "go on" is universal, and two or three G's given in succession may be accepted as an invitation to send faster or without stopping, for the "understand" flash or other signal which with some systems it is customary to give after each word; a first class reader will easily tire out the sender, and if the services of a writer are available long communications can be received without the slightest pause. Should however a word be missed, the reader can at any moment stop the sending by pressing his key and repeating the last word correctly received.

A prefix of some sort should be signalled with messages which are strictly official, to indicate the class of communication about to be transmitted; in offering a service despatch of this description to a distant station, the signaller should give the letter S (or any other prefix agreed on) and on receipt of G. signifying "go on" the transmission of the despatch (which we suppose to bear the official number 20 and contain 12 words) proceeds in the following manner:—

[illegible]

which being translated reads

**Service despatch No. 20 - words 12.**

To Colonel Hay.

Be ready to march at dawn to-morrow .

General Smith.

if necessary the date can be inserted after the number of words.

If after the conclusion of a message the receiving station finds the number of words is correct, the number and name to should be repeated back as an acknowledgment of its receipt, thus,

[illegible]

Figures in the body of the message should also be collated together with doubtful or important words.

If the number of words received does not correspond with that signalled in the preamble of the message the receiving clerk instead of sending the collation should give "only — words" upon which the sender should repeat the first letter of each word until the error is detected when the receiving station should interrupt and say "repeat W after —" or "repeat from — to —"

Instead of ( - - - - - ) two full stops to denote the end of a message and commencement of signature the abbreviation -- -- is generally used by telegraphists.

A less formal message than the above would be signalled in this fashion.

-----  
 -----  
 -----  
 -----  
 -----  
 -----

To which the receiving station would reply - - - - or - - - -  
 for "right" —

A perusal of the foregoing remarks will shew that the list of signals given at the commencement of this paper is quite sufficient for all the purposes of Telegraphic correspondence; for purely military or naval work even less would suffice, and if further simplicity be desirable, but little inconvenience would be experienced were the following signals omitted from the code.

Abbreviations of figures  
 Abbreviation of bar of division  
 Comma  
 Note of admiration  
 Inverted Commas  
 Underline  
 Call signal  
 Wait  
 Termination of correspondence

If the Abbreviations only were omitted, the number of signals remaining in the code would not exceed 50.

The speed at which messages could be transmitted must of course depend entirely on the system employed, and the proficiency of the signaller.

Twelve words per minute (that is ; one letter per second) is the highest I have seen obtained in the field with the lamp-signals by night or the Heliograph by day ; with the flags the working must necessarily be much slower, while on the other hand over twenty words per minute can be signalled by the Electric Telegraph with ease.

The easiest system to learn is that of the Morse Electric Telegraph.. The signals being recorded on the tape, the receiver can decipher them at his leisure ; an intelligent learner should be able to signal and read eight words per minute after a month's steady practice.

Of unrecorded signals the long and short flashes of the Heliograph or night lamps are the easiest to read ; out of a party of six men who had no previous knowledge of any system of signalling, four were able to read at least four words per minute after a fortnight's practice with both systems ; experienced signallers were able to receive from the same men at nearly double that speed. As soon as the alphabet is committed to memory there is nothing to prevent the learner commencing to signal. It is quite possible that his sending will be more distinct at this stage than after the lapse of a few weeks, when having the alphabet at his fingers ends he will not pause to give the necessary length to the dashes or space between the letters.

To read by sound is the most difficult at first, and requires much longer practice to attain proficiency, but when the faculty is once thoroughly acquired it is never forgotten. To the practised ear, the clicking of the armature of a Telegraph instrument, is as intelligible as ordinary printing is to the eye ; the accomplishment is scarcely likely to be of use to those employed in signalling with flags or flashes only, but no operator working the Morse Electric Telegraph can be said to be fully competent, unless in an emergency he can dispense with the use of the tape and read freely by sound alone.

H. C. MANCE, SUPERINTENDENT,  
*Government Persian Gulf Telegraph, Bushire.*



## IV.

## NOTES ON THE LATE CAMP OF EXERCISE.

## 1. THE SYSTEM OF INSTRUCTION.

I wish to draw attention to the system of instruction pursued in the last Camp, and the great advantages derived from by far the greater portion of it. The first change we notice, was the massing of the arms separately under specially appointed officers for preliminary exercise. It could not but have a beneficial effect on both officers and men, and with reference to the cavalry it more than answered its expectations; although we cannot but regret that more time could not be spared for the instruction of officers in the detail of their work. It may be argued very justly that all should join a Camp of Exercise perfectly well grounded in every minor part of their drill; and undoubtedly they should. But in drawing up a system of instruction we do not take into consideration what *ought* to be, but what *is*.

So in the case of our Camps of Exercise, we must begin at the beginning, at all events for years to come, until our ordinary system of instruction is better and more thoroughly carried out, with a view of fitting one and all for a higher class of instruction on joining one of them than can be commenced at present.

Now that it appears a settled thing that, yearly Camps of exercise should be held in future in India, and if possible throughout the different Presidencies, we might begin to introduce a more thorough system of training of officers and men, and by many means infuse a degree of energy into the service which it is sadly deficient in now.

For instance, every large station with a garrison of two or three regiments might hold its own miniature Camp of Exercise, the only difference being that the men would remain in barracks instead of standing camps. It is plain that if a plan of operations is decided on, troops told off, umpires appointed, and field manœuvres executed between two forces or against a skeleton enemy, every one would become interested in the day's work, and we should then be creating the very feeling we wish, and which we cannot expect to see as long as our parades are confined to drill manœuvres without an object. It was a noticeable fact, the interest raised amongst the soldiers both European and Native at the late camp, concerning the manœuvres.

Often after a day's operation have I been asked by privates how things were going on, and why such and such a thing was done, and several times have I been walking behind a party of soldiers in the dusk of the evening, and heard them talking amongst them about what they have seen during the days, and criticising the manœuvres in a far from illogical manner.

Let us now turn from the massing of the different arms separately, which have given us such good results, to the exercise of divisions with these arms combined.

First, we have brigade *versus* brigade.

By far the most instructive and interesting day of this description was the "Attack and defence of the position of Rous." Such a day does more good than a week against skeleton enemies, or more extended lines of operations. Every one has an opportunity of not only knowing the general plan, but they also have a chance of seeing it executed. For instance, after the Kolian and right column from Kiibla-i-vaudi carried the heights, they had a splendid view of the left column still working forward towards Buddha, and could of course understand at once how the whole plan of the operations of the attacking force had been carried out; which naturally created an interest it would have been impossible for them to have felt, if they had been in the dark about the day's work, or fighting against a skeleton enemy. Numbers of the brigade days held at the different camps were most instructive, even if it was only from the numerous mistakes made and commented on, and it appears that we should do well to devote more time to them, than was given up during the late manœuvres. Also it may be considered that by training our European and Native troops to work side by side in compact and handy bodies, such as brigades, we are fitting them to take part in the style of warfare for which they are peculiarly adapted, and which experience has taught us is so well suited for this country. Skeleton enemies are acknowledged to be faulty even in Europe, where the soldiers are trained and educated to a certain degree of perfection; then what can we say about their being introduced into this country at our Camps of Exercise, where by far the greater portion of the force consists of natives. Now, although this latter instruction may only be intended for the higher officers of the service, still it may be possible that instead of allowing the good brigade lessons to suffice, we may be really unknowingly counteracting the advantages already gained. When we see that even officers commanding regiments failed to appreciate or understand that a few men scattered along a ridge, represented numberless battalions, and that consequently they urged on their corps to an attack which would have been palpably quite impossible had the supposed force really held the position, we cannot be surprised to learn that the soldiers themselves think skeleton enemies a farce. If the latter are intended only to give General Officers opportunities of manœuvring their divisions, let this be generally understood and let there be no attempt at a defence. Again, the most difficult positions such as Rous might be chosen, and carefully marked out with large flags easily seen, as was only once done during our late Camp, *viz.*, on the 25th of January in the position covering Boothan. Do not let the advance be over an open plain, but through such country as will give the General some chance of displaying tactical skill, which he certainly never had at Hussun Abdal against a skeleton enemy.



Then if all the umpires and officers off duty were assembled on some commanding spot, which was supposed for the sake of the operations to be inaccessible to either side, the day's work might at all events be rendered instructive to a few, whereas it is doubtful whether it is to more than one at present. A few guns and soldiers should be stationed to open fire at intervals, not with a view to representing any particular strength, but simply to draw attention to the line of the defence. This with a previous plan of operations against a certain position, supposed to be held by a force of such and such strength, and finally with a vulnerable point given to aim at and an object to achieve, would raise an amount of interest in an attack on a skeleton enemy which it entirely lacks at present.

We now come to our grand operations. These are intended of course to give every one, but more especially senior officers practical lessons in strategy and tactics on a large scale.

Did our late ones fulfil this purpose ?

I am afraid we must answer, not altogether. Then why ? As a looker on, and having carefully studied the map and noted most minutely the moves of the troops from beginning to end, I came to the conclusion that several causes tended to prevent their being brought to a successful issue.

First and by far the most important cause, as it appeared to me was, that the lines of operations were too extended, and consequently each force had too much to do, I mean strictly with reference to the orders published for general information.

The Attack manœuvres were a case in point. Two bridges between six and seven miles apart, had to be protected, a fort had to be held, which would be commanded from the ranges of hills on two sides of it, and lastly nearly ten miles of country had to be guarded by a force of under six thousand men and thirty guns.

It may be said " but the attacking army was not much stronger." Quite true, and all the more reason that the line of operations should have been less extended. It was proved by the result, that the attack could only be made through a portion of the line which General Macdonell was unable to protect, except by seriously weakening the force with which he was holding his most important position. General Macdonell was told to hold the two bridges and the Fort of Attock and he did, but he had not force enough to protect the long line of defence. General Tombs was to endeavour to gain possession of one of the bridges, but we see he did not succeed. He did, however, contrive to break through the weak unprotected line, and to take up a very strong position on the hills overlooking Attock. Let us suppose for argument's sake that the latter the next day, or the day after, had managed to have taken the fort and bridge, still being supported by and in communication with the

main body of the Rawal Pindee army. What position would General Macdonell have been in at Mundoria? His main line of communication along the right bank by the road to Peshawur, under the fire of hostile guns, he would have been in the perilous position of being cut off, unless he retired across through the mountains to the west, after blowing up or destroying the bridge of boats. As I said, before the Peshawur Force being reduced to the defensive by the advance of a more powerful force, their two bridges seemed a source of weakness to one another, because by either of them their line of retreat could be threatened.

My view of the case may be a very wrong one, but I have only given it after carefully examining the subject from both sides. Being extremely interested in every operation, I took every step possible to come to a right understanding of each, and I think the action of the attacking force clearly showed how fully they realized the extended nature of the task assigned to them.

If it is considered that such an extended line gives greater scope to the attacking force, it may be suggested that the partial introduction of the "skeleton enemy" system might be brought into play in our final grand operations, with advantage. For instance, if the valley to the north-west of Dakner where the junction of the Roomia and Dakner mountain roads is formed, had been held by a skeleton force, General Macdonell would have had greater freedom of action. Or better even than this, if he could have held his bridge-head with a skeleton force, he could have moved out and fought a battle between Dakner and Hajee Shah, which at least would have rendered the operations more interesting and exciting.

The signalling arrangements at Hussun Abdal gave us much better results than at Delhi, but I would again notice the entire absence of the use of "Cypher" either in written messages or those signalled with the visual apparatus. Although there was but one instance of a message falling into the wrong hands, I believe, still we must not think that there is no necessity for a cypher. I feel confident I am right when I say that, no body of signalmen, no matter how expert they may be, will ever attempt to signal messages in cypher, as long as our present laborious, tedious, and complicated system remains in use, unless actually forced to do so, because they know how liable they are to make mistakes.

The signals of the defending force at Rous could have been read with the greatest ease, but I believe I am not wrong in stating that with one column there was no one who knew the system, which shows how very necessary it is that every one should be instructed, although the duties be carried out by a selected body of men. The signalling with the cavalry was not satisfactory owing to their rapid movements, which rendered the establishment of "Flying stations" quite impossible.

Having briefly passed in review the course of instruction pursued at our late Camp of Exercise, and shown, I trust, what a capital system it was based on, I would add a few words with reference to the working of the several executive departments, which tended so much to render successful the entire arrangements of the several camps, and contributed to such an extent to the comfort of the troops, and in fact every one taking part in the manœuvres at Hussun Abdal.

When on reference to the official statistics published by authority, we find that there were 16,582 officers, non-commissioned officers (and rank and file ; 16,732 public and private followers ; 4997 horses, 129 elephants, and 10,069 camels, mules, ponies and bullocks, assembled at Hussun Abdal, and know that the Commissariat Department found them all in rations, grain, forage, etc., without a single hitch occurring from the commencement to the end ; we are able to form some conception of the admirable state of the machinery of the executive, which enabled the department to carry out such a work without any apparent increased labor or pressure.

If any thing further was required, or even necessary in proof of the state of efficiency of the Commissariat department at the Punjab camp, it would be sufficient to mention that, under their superintendence, twenty-five batteries and regiments marched away from the vicinity of Hussun Abdal on the final break up of the camp, in *one* day.

The medical arrangements were most complete, and every means were taken to preserve the health of the troops to the utmost. Judicious and considerate orders were issued to insure the troops, both European and Native, being well looked after ; and lastly, the field hospitals at Lawrencepoor were so well provided with every comfort a sick man could wish for, that the small percentage of sick throughout the manœuvres speaks volumes for the grand health the troops were in, otherwise with such a comfortable prospect before them, they would have gone sick for the sake of being so well looked after.

Turning to the Provost Marshal's department, and the report furnished of its working, we have to notice, the very small percentage of crime and the almost entire absence of complaints from the surrounding villages.

Taking one of the divisional camps, I find from the records that up to the time of the Attock manœuvres, when the division was augmented, there were under (40) forty crimes registered during the space of nearly a month, which was not *one* per cent. of the troops and followers.

Of the prisoners nine-tenths belonged to the latter class, and their crimes were mostly of the most petty natures, such as nuisance, throwing refuse in the wrong place, &c. Suttlers were allowed to trade in the camps but not without a printed pass, which was furnished to all on a small fee.

The latter was instituted to prevent bad characters wandering through the lines without employment; and the fund thus raised was applied to the keeping up of a good conservancy establishment.

Another very good system was the furnishing every follower both public and private with a "ticket of residence," without which they were liable to be taken up. It was thought at first that this might cause a good deal of inconvenience to officers, but a rule was established that any private servant was to be allowed to return to his master, on the latter giving a written guarantee that he should be forthcoming when required.

The civil police arrangements tended a great deal to the satisfactory result of the working of this department. Throughout the Camp from time to time numerous most useful pamphlets, memorandums, maps and plans of operations, were printed, published and circulated by the Adjutant and Quartermaster Generals' Departments. I would notice more especially the last map issued solely for the use of the Umpire Staff. On it were marked the distances in yards between all the villages and principal spots, such as Trigonometrical survey stations. An umpire with a battery was thus enabled to see at a glance in nearly every case, what range the guns were opening at.

Again, a map of the position of Rous, two inches to a mile, showing the lines of march of the different attacking columns and retreat of the defending force, together with a sketch of the mountains, taken at the time of the assault, was printed in the new blue ink style, and distributed with a memorandum of the operations, which enabled us to fight the day over again and better appreciate the task assigned to both forces.

I suppose with the small camp printing and lithographing establishments, we cannot expect the above to be issued so quickly as we could wish, but they undoubtedly lose a good deal of their interest, when other operations have intervened, or much time has elapsed before they can be got ready for circulation. Still whether they are published sooner or later, they cannot but be most interesting and instructive, enabling officers to perfect themselves more thoroughly in the art of *reading* maps, which is such a necessary accomplishment of a soldier. The maps of the theatre of operations, which were supplied to the army in large numbers must have been of immense benefit to all officers, enabling them to compare the ground as they worked over it, with the printed surveys. I would notice the maps printed on calico, called pocket handkerchief maps, which were so convenient and useful to officers on survey or reconnoitring duty, but the supply of which were rather too limited to allow of them being distributed to all.

The dress of the army was a perpetual topic of conversation throughout the camp, and as numerous mistakes were made between friends and foes on several occasions on account of the similarity of the dress of the two forces, I would here prominently notice the very admirable plan

adopted by two or three native regiments of having a loose kakee blouse which they donned immediately on starting to take part in the manœuvres of the day. This with a cover of the same sort for the pugree rendered them almost invisible against brown mountain sides. On several occasions, I could not believe my eyes when a distinguished regiment was pointed out to me, working over the hills in their dusty coloured but almost invisible uniform, and I was told it was the same regiment I had seen march past only a few days before; and which I had admired so much for their smartness, with the close fitting red jackets and picturesque puggies, and I think white gaiters. Directly I saw them and knew they were the same men, I was struck with the transformation. Why could not this be universally adopted? It would be an inexpensive way of combining the usefulness of the kakee with the smartness of the scarlet clothing. At all events let all regiments coming to our future Camps of Exercise be provided with them, and then we shall not see friends firing on friends, because the dresses were alike, and we shall have more practical evidence, if any is necessary, as to the strikingly superior qualities of the one as compared to the other.

The trial of carrying reserve ammunition on mules with certain requirements was made, but I am not aware that it was tested sufficiently to give us any practical results.

Space will not allow of my referring to many other points which I should have wished to.

## 2. THE ORGANIZATION OF THE UMPIRE STAFF AND THE REGULATIONS FOR THEIR GUIDANCE.

Before closing this brief account of our late Camp of Exercise, I would wish to say a few words with reference to the organization of our Umpire Staff, together with the rules which have been drawn up for their guidance, on the efficiency of which the success of our Peace operations so much if not almost entirely depends.

Notwithstanding that a number of officers were specially deputed for the duty, who were further assisted by the representatives of our different presidencies, still the paucity of umpires actually carrying on their work must have been apparent to all engaged in the manœuvres. If we take the number of these officers with reference to the force they were to act with, we find that, there were 39 umpires to be distributed amongst 39 regiments or batteries. Of them two were senior and ten assistant umpires, leaving twenty-seven over, which gave one to each battery, cavalry corps and brigade of infantry.

Having been employed on the Umpire Staff from the very commencement of the Cavalry parades, I trust, I may be allowed to mention one or two instances which tend to prove that we require a much larger percentage of umpires, if we wish to come to satisfactory conclusions as to the different minor phases of the day's manœuvres, which are so very

necessary for the drawing up of a clear, concise, and undeniable decision on the whole operations.

The Umpires were told off in the following manner :—

One Umpire in Chief.

Two Senior Umpires, one for each Force.

One for each Cavalry regiment.

” ” ” Battery.

” ” ” Brigade of Infantry.

There were a few assistant umpires, some of whom acted as umpires to batteries and Cavalry regiments, whilst the remainder assisted with brigades of Infantry.

I believe I am right in saying that on several occasions some of the batteries had neither an umpire nor an assistant.

I wish to draw more particular attention to the Infantry Brigades, and to the great difficulty, amounting almost to a physical impossibility, of one umpire attending to, being present with, and reporting on the operations of three regiments throughout the day.

One instance will suffice.

In the Attock manœuvres the 3rd Infantry Brigade was divided into two portions, with an interval of at least five miles ; the 36th Foot and 15th Sikhs being near Miawala-ban-pole, and the 12th Kelat-i-Gilzies close to the Indus, about a mile and a half below Attock. On Thursday, the last day of these operations, at about 12 noon the brigade was scattered in the following order. Six companies of the 36th Foot at Dakner village. Two companies of the same corps with the 15th Sikhs two miles off amongst the hills, guarding the junction of the Dakner and Roomia mountain paths, and finally the 12th N. I. still further on close to the banks of the Indus, with two companies on the heights near the Attock fort, where the engagement afterwards took place with General Brownlow's Force. To give a report on the whole of these isolated portions of a brigade, all of which came into action at different times of the day at different places, there was but *one* umpire. He had not even an assistant, who although not entitled to give a decision, might have been of use to him in gaining information of the different engagements for him.

Now let me ask how was it possible for one umpire to watch the operations of the whole brigade, even in the most superficial manner, so as to enable him to give anything like a fair and correct decision in a case like this.

Although I think the above is sufficient to show clearly the necessity for an increased Umpire Staff, still I will quote one other instance. In the second and final series of operations the 3rd brigade after driving a detachment of the defence from the Police Chowkee, moved on Kolian. The line of skirmishers was very extended, and the country much broken, the left of the line being rather hotly engaged, the umpire proceeded in that direction, eventually becoming detached with one regiment in an attack made on Bai. Simultaneously the remainder of the brigade attacked Kolian, but present with it was only an unfortunate assistant, who would have been in an awkward position, but that the defending force withdrew across the river without much resistance, and left his portion of the 3rd brigade in peaceful possession of the village. The next day the same thing had to be continued, as it was impossible for one umpire to be in two places a mile apart. There is no doubt whatever, an umpire or an assistant, who is entitled to give a decision, and not placed in his present ambiguous position, is required with every detached body, to prevent such absurd occurrences as we sometimes witnessed of a body of men after having been demolished, coming to life again and taking part in, and very likely helping to decide the day's operations in favour of its own side.

I would here suggest what appears to be one solution of the difficulty.

Instead of having representatives from the different presidencies let a number of officers be selected from the forces throughout India simply and solely to act as umpires, and let them be warned previously in order that they may thoroughly master the theory and technicalities of the duties they would have to perform ; and lastly, on joining the Camp of Exercise, let them be told off to regiments and batteries with a view to their accustoming themselves to the working of their own particular corps, and of becoming intimate with the officers, when it is to be hoped they would enjoy a less invidious position than at present.

Each individual corps, Artillery, Cavalry, and Infantry should have its umpire.

Each brigade its senior umpire, and each division or army its chief umpire.

At the end of each day let all the latter meet a specially deputed umpire in chief, and decide on the verdict for the day.

With regard to assistant umpires, it appears clearly, that if the numbers of the regular staff are augmented to the above strength, we do not require specially trained men for the duties of an assistant ; and the following seems worthy of consideration.

Let officers be taken from regiments for the day, or for one series of operations, as might be considered best, and attached to the umpir staff, one to each regiment and a few to remain with the senior and

chief umpires, so as to be ready to proceed with any small body detached for any special duty. With Cavalry and British Infantry there would be no difficulty, as we know how often subalterns are taken out to act as gallopers to General Officers, and I feel confident, that numbers of men, who having a horse or horses would only be too glad of such an opportunity of learning their work, and again of seeing more of the operations than they would possibly do when on foot. On account of the paucity of officers with native infantry regiments, there might be some difficulty in a few cases, but their places could generally be filled up with officers from British corps. These officers might be attached to different regiments, not their own, and by their reports of detached skirmishes or movements we should obtain those missing links in our operations which had so often to be imagined during our late camp. The feeling of partizanship, which is so difficult to repress, (human nature would not be human nature if it did not exist,) might be counteracted if the system and organization was better understood. If umpires were more associated with the body of men with whom they were going to work, the unpleasantness of their position would disappear, and they would be enabled to act, with greater confidence, than they do now. Finally, the instruction of umpires should not commence at a Camp of Exercise, but on the private regimental parade ground. Let it form part of the Garrison Course of Instruction, and let copies of the umpire rules be sent to every regiment, and every officer provided with one. The monotony of our regimental parades would well be varied, and an amount of energy and esprit created, which must have a beneficial effect, by pitting companies against companies; and half battalions against half battalions. Let umpires always be chosen and appointed, who should be required to furnish a rough written or verbal report of the manœuvres and their decisions. Then again wherever opportunity allows, let regiment be pitted against regiment; and brigade against brigade. By these means every one from the most junior officer would not only learn the duty of an umpire, but be called on to really study and appreciate, practically the art of strategy and tactics, and if supplemented by the introduction of the *Kriegspiel*, would go far to removing the very extraordinary impression which appears to prevail, and in some cases to be nurtured regarding the true position of the Umpire Staff.\*

The umpire regulations are too lengthy to give in detail here, but I would wish to mention a few points connected with them, which I noticed in the practical working of them during the late manœuvres. In the first place the umpires were kept too much in the dark with reference to proposed operations, both at the commencement, and during the time they lasted; notwithstanding that it distinctly lays down in the rules that,—

---

\* Since writing these, I see that Lord Napier has issued fresh standing orders with regard to the system of instruction to be pursued throughout the drill season in all Brigades and Divisions.



"A commander deciding to attack must at once inform the umpire attached to him, and should also explain to him the instructions he has given or sent to his subordinate leaders."

At the opening of the two last grand operations, the umpire staff, or at least a greater portion of them, spent the whole or most of the first day of each, in a game of hide-and-seek after their respective corps or brigades. Luckily there was no collision in their cases, so their absence did not matter, but such a thing might easily be obviated by the officers commanding the forces sending the night before, a rough statement of the positions of their different regiments or batteries, to their respective Chief Umpires, by whom it would be conveyed to their staff. It is rather hard to make a man ride ten or twelve miles before he finds the troops he is to look after, as was frequently the case at Hussun, when no one from the Senior Umpire downwards had the slightest idea where the different forces were in position. It must be remembered, that the whole of the Umpire Staff were encamped together, and joined their respective forces only for the day, returning to the Head Quarters of an evening to make their reports.

In giving a decision with regard to a collision between opposing forces, I believe I am correct in saying, in only one instance\* was the victorious side debited with any loss.

Cavalry charges between corps of almost even strength, heavy infantry engagements took place, decisions were given that certain troops were defeated, and must retire and remain out of action; yet the victors were allowed to remain intact. Surely, this is not acting up to the spirit of the order, which says that peace manœuvres are to be conducted as much as possible on war principles.

The victorious force might be debited with a loss of a third of that of the defeated body of troops.

It has been a move in the right direction, calculating the numerical strength of a force by the number of companies, guns and squadrons *only*.

The result of artillery fire is the most difficult thing to decide, but much needless trouble and rather absurd scenes would have been prevented, had the rule, that "one or two cavalry orderlies should be told off to each battery to carry messages to the force on which the guns are playing," been properly acted up to.

It was very apparent that the decisions were chiefly confined to one term, viz, "Defeated"—Such terms as "Slightly shaken," "Much shaken"—"Checked"—"Totally Defeated"—and "Routed and Dispersed"—were seldom used in an impromptu decision and not very often in a written report.

---

\* Attack on Mallpore on the 24th of January during the manœuvres of the two brigades of the 1st Division before H. E. Lord Napier.

Would not "Checked"—"Defeated" and "Totally Defeated" be sufficient?

The first causing both sides to retire two hundred yards; unless one was holding a strong position, then the other only to retire. The second causing the unsuccessful force to retire 500 yards and the third to necessitate the beaten troops remaining out of action for two hours. It was very frequently noticed, that not only did the troops fire very wildly, but that no trouble was taken to sight the rifle at all. Umpires have a difficult task to perform when they are instructed "to take up a commanding position between the two opposing forces," and also, in another paragraph, "to carefully ascertain whether the rifles are properly sighted". This would be a duty to be consigned to the assistants such as I have proposed.

Just as it is possible to release prisoners, which having been recognized, the order with reference to their being made was cut out of the umpire rules; so it is within the limits of possibility that guns may be recaptured.

However, the rules referring to the latter remain. For instance "Should Infantry skirmishers numbering three times the battery escort arrive within 400 yards". "If guns not protected, allow Infantry to approach unobserved within 200 yards,"—and lastly "artillery in motion, when overtaken by Cavalry" are to be considered as captured.

Would it not be better to order them out of action for two or three hours?

The regulations have it that, "a body of infantry shaken by artillery or disordered by a retreat over an open plain, offers great chances of successful attack to Cavalry."

On the very last day of the manœuvres a regiment had been and was returning under a very heavy fire for some hours, when suddenly they were charged by a squadron of cavalry, slightly on the flank. The line of skirmishers threw themselves into rallying squares, and received the charge in good style. The cavalry were ordered out of action for half an hour. For what reason? Simply for thoroughly acting up to the special instructions to cavalry officers.

What the meaning of this paragraph is I cannot quite understand. "An attack made by at least one squadron of cavalry against a battalion, which does not await the attack stationary, is to be considered as successful."

Does this refer to regiments in open order receiving cavalry in this formation? Because, if so, it would be as well to know what strength of cavalry can be resisted by our new formation of "files and groups."

One of the last paragraphs of the regulations gives us the following:—

"If a second line be at hand in support, worsted cavalry are never to be considered as more than "checked." It would be as well to lay down some rule for the proper distance the supporting line should be from the leading one, as in the two cavalry engagements, *viz.* on the 28th December near Moraria, and, on the 10th of January near Madrota, in the first case the supporting line was too close, and in the second too far off to be of any use in the opinion of the umpires, and so in both instances. The whole force was considered as defeated. Artillery fire has given and will always give us most trouble in forming decisions, on account of the difficulty of ascertaining the direction of the fire, but is it not possible to introduce some system of parachutes, to be fired at a great elevation and without the heavy shell covering which is used at present,—and which would be so dangerous to use at peace manœuvres.

The idea may appear at first sight an absurd one, but I see no reason why some light and cheap framework could not be invented, and applied in the manner I suggest. When we consider the state of perfection we have reached in the present century in mechanical art, nothing of this sort should defy the skill of our inventors.

In conclusion, I would point out how very difficult it is for any of us to justly appreciate all the advantages to be derived from being present throughout one of our Camps of Exercise, such as that held last cold season in the Panjab.

Some learn a great deal, others only a little, but the number must be few indeed who can say when they return to their stations, that they time spent at one has been entirely wasted.

Let a little more publicity be given to intended operations and daily results of manœuvres; let the interest men have in their work be carefully encouraged, and we need have no fear but that our future Camps of Exercise will be more instructive, and more interesting if it is possible, than our late one was at Hussun Abdul.

R. HENNELL, *Captain,*

*Bombay Sappers and Miners,*

*Late 20th Regiment Native Light Infantry.*



## V.

## INFANTRY ATTACKS.

IN a paper by "Iskender" published in the 7th number of the proceedings of the "United Service Institution of India," a change in the fighting tactics of Infantry is ably advocated, and as it is evidently the desire of the writer to induce further discussion on the subject, the following observations require no apology.

It must be admitted that the greater the simplicity in formations when under fire the better for the troops engaged—that changes of formation on near approach to the enemy are fraught with danger and are most likely to produce great confusion and extra unsteadiness; therefore that it would be eminently desirable to get, while out of small arm or mitrailleur range, at once into such a fighting order as may best be able to endure the test of their fire during the advance, and yet to be formidable at the moment of closing with the enemy.

To this end it is now proposed that attacks should be made by *rushes* with the intermediate halts, when the troops should lie down to recover themselves, and keep as close as possible.

That the preliminary formation before breaking into attacking order should be Line of Battalion Quarter Columns, at half deploying interval, (which gives four men for every two feet of the preliminary battle order amongst the first troops to be engaged).

That the Brigade strength when practicable should consist as regards Infantry of five battalions—*viz.* three in the first line and two in the second at a convenient distance to the rear.

That on the order to advance to the attack the two leading companies of each Battalion should break into skirmishing order by sections on the front of their respective battalions, (taking cover or lying down as the extension proceeds.)

That they should advance by rushes of alternate sections (say the right sections commencing) from cover to cover protecting each other's advance by fire, working to the front and looking to their section leaders for immediate guidance, being "in hand" as to the extent of their fire and as to the regulation of the distance to be advanced at each rush.

Right section leaders to look to left section leaders for mutual support and so on.

That the next two companies from each battalion should extend and follow at a convenient distance (which should be regulated.

according to circumstances) advancing by rushes—lying down to rest, &c. &c. their duty being to support, and assist when there is a check, by temporary re-inforcement ; but while doing so to remember that they are to keep as distinct as possible from the skirmishing body, availing themselves of every cover and preserving themselves fresh and strong for the final closing with their adversary, a *little* after the skirmishers have come to close quarters with him.

That the four rear companies of each battalion should deploy into line—then form fours deep—and when in line four deep, (from which any subsequent manœuvres are possible) to follow the second skirmishing line by rushes, with intervals of halts (lying down), gradually diminishing distance from the bodies in front, so as to come up with them a little after the supporting line has given its shock of battle, which as a matter of speed, would be easy, seeing that the first line must of necessity move slowly, and that the second waits upon it.

That every attack should converge upon a common centre and that commanders and staff officers should direct accordingly by closing up their men gradually upon it.

That the battalions of the original brigade second line, should move from deployed line, by fours from a flank of companies to the front, and be able either to make permanent, a success which otherwise might be only temporary, or to secure a retreat for those who have gone before, should they have struggled for victory in vain.

*Concluding remarks.*—The first body of skirmishers advance in a strong manageable body not as a “cloud” (the foremost men of which only can act,)—the latter give the moral support of numbers it is true, but form an easy mark, and cannot fail to be subject to severe losses.

The second line of skirmishers as proposed, is more effective for support, being a distinct body, and when not re-inforcing have nothing to do with anything but advancing from post to post without unnecessarily exposing themselves. The formation in battalion quarter columns at half deploying interval, prevents the breaking up of a Battalion into half battalions, than which it is difficult to conceive anything more objectionable if it can be avoided. Surely our wretched battalions would be weak enough after the first general action !

T. LYNDEN BELL, MAJOR,  
*Commandg. 1st Battn. 6th Regt.*

NOTE.—It is hardly necessary to remark that no attack could be successful without a covering artillery fire to prepare for it.

The writer of this paper does not pretend to entire originality in the ideas brought forward, he has endeavoured to collect such as seem to him likely to help to the solution of a great difficulty, viz.—*to attain a great end, with economy of force.*

## VI.

RECORDS OF THE 27TH OR 1ST BELOOCH REGIMENT  
LIGHT INFANTRY.

## PROCLAMATION.

*Hydrabad, May 1844.*

BELOOCHEE and Scindee soldiers are required by His Excellency the Governor, they are to be armed like the Sepoys and to be dressed in the usual Belooch ungrika, panjama and Scindee cap—to serve within the limits of Scinde. Each man is to be enlisted for 5 years.

Five men out of each hundred will be allowed to be absent on leave every year.

The pay of each Sepoy will be seven rupees per mensem, and they will also receive an ungrika, and a cap yearly from Government. Every man may wear his hair, beard, and moustachios as he pleases.

The new regiments must undergo some drill, but it shall not be so strict as that the Sepoys go through. All who may wish to enlist are to apply to the officers in charge of Police at Sukkur, Shikarpore, Hydrabad and Kurrachee.

(Signed) C. J. NAPIER, *Governor.*

Such was the Proclamation issued by one of the best soldiers England ever sent to India; remembering as he did the pluck and indomitable spirit evinced by those warriors who fought so gallantly against British bayonets at Meance, it is not surprising that the thought should strike Sir Chas. Napier of endeavouring to win over to our standard so fine a class of men, and thus while securing a native soldier of a physique then unknown in the western presidency, we at the same time checked their hereditary occupation of looting and murder; thereby aiding much in the civilization of the district so lately conquered. Politically it was a great success—while I think it may be fairly recorded that it gave to the State two regiments of Native soldiers unsurpassed in fidelity, good conduct in quarters, or courage, with great powers of endurance in the field.

Agreeably with the above the 1st Belooch Regiment was raised in Kurrachee on the 8th of May 1844 by Major Jackson.

The regiment remained at Kurrachee until January 1846 when it marched en route to Bawulpore to join the Force assembling there; but on arrival at Chunessur, two marches from Bawulpore, the order was countermanded, and the corps returned to Kurrachee, where it arrived 25th April 1846.

On the 3rd January 1847, the regiment marched to Hyderabad where it remained until February 1848, when it moved to Shikarpore. Colors were received by the regiment on the 5th May 1848.

The regiment returned to Hyderabad 18th November 1850, and remained there until 20th November 1855, when it marched to Kurrachee.

On the 17th of May 1857, on the breaking out of the Mutiny in Bengal, the regiment officered as permargin, was the first selected from the Bombay Presidency to render aid to those so much in need of it, in the North West Provinces, and accordingly it marched to Hyderabad en route for the Punjab and Delhi.

1857.  
Major Farquhar in Command.  
Lieutenant Nicholetts, acting 2nd in Command.  
Lt. Knight, acting Adjutant.  
Lt. C. Bannerman, acting Quartermaster.  
Asst. Surgeon Sandwith.

From Hyderabad it marched to Sukkur, where it was halted for a short time in consequence of disaffection having appeared amongst the Bengal Irregular Cavalry then at Jacobabad.

The regiment left Sukkur 24th June 1857 by boats, and reached Mooltan 8th July.

On the 15th July the strength of the regiment was increased by two companies.

On the 27th July 1857 the right wing and head quarters of the regiment, officers as per margin, marched from Mooltan for Dehli. At this time Sir John Lawrence wanted an escort for the all important siege train so urgently required for the capture of Dehli, and accordingly he directed the Belooches to proceed via Ferozepore, for the purpose of escorting it, this they did, arriving at Delhi on the 4th September where they at once took part in the operations before and storming of the rebels' stronghold.

The casualties of the wing were :—

Killed:—Lieutenant C. Bannerman (who had joined from the left wing only a few days previous to the assault), 1 native officer, 7 rank and file.

Wounded :—5 non-commissioned officers, 43 rank and file ; missing 1 rank and file.

After the fall of Delhi (20th September) the right wing was directed to proceed to Boolundshuhur and watch the bank of the Ganges.

It remained in the Boolundshuhur district for some time, performing various services, and taking part in the action of Gungeree &c., &c.

The left wing, with officers as per margin had been detained at



Lieut. Nicholetts in command.  
Lieut. Bannerman.

Lieut. W. Hicks, joining as  
Staff Officer on the wing leaving  
Mooltan.

Mooltan, on the less honorable, but still most necessary duty of watching a battery of Artillery, and two mutinous regiments of the Bengal Army, until the 26th August, when it moved to Umritsur, and was attached to the Punjab Moveable Column, and again employed on similar duty, subsequently moving to Delhi; (Lieut. H. Beville 2nd in Command, rejoining from England on the march and assuming command; Lieut. Nicholetts joining head quarters and resuming his Adjutantcy) it was there quartered in the "Jumma Musjid," leaving again for Meerut on the 9th January 1858, to join the column about to be formed under Major General N. Penny, C.B., for the campaign in Rohilcund.

On the 7th March the wing having been strengthened by two young Bengal officers, Lieut. Elton and Gregory, marched to Kurkoddah where the column was formed, and with it, served throughout the campaign, being present at the action of Kurkraulee, action with Feroze Shah's force before Bareilly, and capture of that Town,—action at Bunnee, and Mohomdee, and attack made by the rebels on Shahjehanpore.

From Shahjehanpore the wing with two guns of Bengal Artillery the whole under command of Lieutenant Beville, was ordered to make a forced march on the Fort of Jellalabad, 22 miles distant, and towards which the rebels were supposed to be advancing.

The detachment having marched all night without a halt, arrived early the following morning just in time to secure the fort before the rebel force made its appearance.\*

From the 1st of June to the 29th July the wing remained at Jellalabad, holding it as one of a cordon of military posts on the borders of Oude. On the latter date, being relieved by the 22nd Punjab Infantry, it marched to Budaon arriving there on the 1st of August. It did not long remain there idle. Troops were required to enter Oude from the south and accordingly a force was being collected at Allahabad for that purpose. The 1st Belooch Regiment being one selected, both wings marched, the head quarters wing from Boolundshuhur, the left wing from Budaon via Futtehghur, joining on the Grand Trunk Road after a separation of a year, and reaching Allahabad on the 25th September.

On the 28th September Lt. H. Beville, having been appointed Commandant of the 13th Punjab N. I. was ordered to join forthwith; Lieut. Nicholetts again succeeding to the 2nd in Command, Lieut. Hicks to the adjutantcy and Lieut. G. F. Beville as quartermaster.

As a reward for the loyalty and good services of the regiment already shewn throughout the campaign and Mutiny, Government was pleased from 1st October to change the regiment from a local corps to an extra regiment of the Line, thereby giving all ranks the bene-

---

\* For this and previous services Lieut. H. Beville was specially commended, and his name recorded for brevet promotion.

fit the Pension Regulations, previous service being allowed to reckon, for such as accepted the new terms.

On the 11th October 1858 the regiment marched to Suraoon to join one of the columns which were being formed for the subjugation of Oude.

On the 21st of October the regiment with three guns R. H. A. and two squadrons 1st Punjab Cavalry, the whole under command of Lt. Colonel Farquhar marched to Budree, to take the Fort belonging to the Thacoorina of the place.

On the arrival of the troops, the Fort was evacuated by the rebels, and having been dismantled of its guns, was blown up.

The force then marched to Shumspore and found that Fort evacuated, and on the 25th of October rejoined the column under command of Brigadier Wetherall, C.B. Marched on Rampore Kussia and reached that Fort on the 3rd November 1858; which was taken after an obstinate resistance, the assaulting column losing 10 per cent of the men engaged. The regiment lost killed 9 rank and file; and 1 officer, and 13 rank and file were wounded.

In the officer wounded, the regiment lost its commandant, Lt. Colonel Farquhar who fell shot through the knee, subsequently necessitating amputation. He was taken into Allahabad. Lieut. G. Nichollets succeeding to the command.

During this obstinate fight Lieut. G. F. Beville was conspicuous for the gallant way in which with a few men he crossed the river for the purpose of driving the enemy from a temple in which they were strongly posted.

The column then marched on Amethee, which the enemy evacuated during the night.

On the 13th the column joined Lord Clyde's Force, and on the 15th marched on Shunkerpore, held by Beni Mahdeo, and which place, he evacuated.

After following Beni Mahdeo's Force, marching 61 miles in 60 hours, the column overtook and brought him to action at Dhoondia Keria.

The enemy were defeated, and the greater portion of them driven into the river.

On the 26th November 1858 the regiment was detached with a column under Lieut.-Colonel Gordon, R.A., to follow up the remainder of their Force, and having driven them across the Gogra, the column marched to Roy Bareilly, and escorting thence heavy guns to Lucknow, again joined Lord Clyde's Force on the 3rd of December.

The regiment was attached to the 1st Brigade, under Brigadier Horsford, C.B., left Lucknow on the 5th December and took part in the occupation of Baraich; actions at Churda, Nanpara, and Brijcedia and

capture of the Fort of Mujedia, which was held by the Nana, on the 27th December 1858.

The head quarters wing of the regiment retired with the main force to Nanpara, leaving the left wing under command of Lieut. Hicks, and detachment 1st Punjab Cavalry, with orders to destroy the fort.

On the 31st December the head quarters wing with the main force, having marched during the night, came upon the enemy under the Nana at Banke, on the river Raptée, into which they were driven.

1859. The left wing having mined and blown up the Fort  
of Mujedia rejoined head quarters on the 4th January  
1859.

On the 8th January the Force under Lord Clyde, marched on Lucknow, leaving the left wing of the regiment again under Lieutenant Hicks, with Brigadier Horsford's Brigade on the Raptée.

It was engaged in action with the enemy at Likta Ghat, crossing the river and taking possession of their guns (14 in number) which were in position on the opposite bank.

The following day the left wing with the 1st Punjab Cavalry, under Major Hughes, was sent in pursuit of the enemy in the Nepal territory, and returned having destroyed a quantity of ammunition and baggage, and bringing back several prisoners.

The right wing arrived at Lucknow on the 17th January, on the 25th Lieutenant H. Beville rejoined his old corps as Officiating Commandant. The regiment remained at Lucknow till 24th February, when orders having been issued for the regiment to return to its own Presidency, it marched on that date via Cawnpore and Delhi.

On reaching Cawnpore on the 27th February, the regiment was halted by telegram, and directed to await the arrival of His Excellency Lord Clyde.

The regiment escorted his Lordship, from Cawnpore to Delhi, leaving the former place on the 7th March.

On the march from Cawnpore to Delhi at Camp Bewur, the left wing again rejoined head quarters, immediately afterwards losing for a time Lieutenant G. Nicholletts who was compelled to proceed to Europe for a change.

It should here be mentioned that this officer's name was also recorded for brevet promotion for the services he rendered in command of the regiment during several actions throughout the Oude Campaign—Lieutenant Hicks succeeded as Acting 2nd in Command and Lieutenant G. F. Beville as Adjutant.

The regiment reached Delhi on the 3rd of April, and left on the

5th, proceeding viâ Hansi and Hissar to Fazulki on the Sutledge, 50 miles below Ferozepore, which place it reached on the 29th April.

The head quarters with right wing embarked on board boats for Hyderabad, Scinde, on the 2nd of May, arriving on the 20th. The left wing followed on or about the 12th reaching Hyderabad on the 30th May 1856. The Regiment completing on its march home a distance of 1400 miles, and having with few exceptions, through all climates, been under canvas for two years.

On the regiment being ordered to return to its own Presidency, the following general order was issued by His Excellency Lord Clyde :—

**GENERAL ORDERS BY THE RIGHT HON'BLE THE COMMANDER  
IN CHIEF,**

*Adjutant General's Office, Allahabad, 28th February 1859.*

Her Majesty's 64th Foot and the Belooch Battalion are about to return to the Presidency of Bombay, from whence they came to assist in the restoration of order after the outbreak of mutiny and insurrection in that of Bengal.

2. The services of both these corps have been admirable. The Commander-in-Chief is happy in being able to congratulate them on the termination of the campaigns of the last year and a half, in which they have alike rendered signal service to the State, and won great honor for themselves.

3. Her Majesty's 64th came round from Persia, where they had served under Sir James Outram, to be among the first of those who under the lamented Sir Henry Havelock forced their way from Allahabad to Cawnpore in 1857. They were afterwards at the various engagements at that place, the operations in the Dooab, and in the campaign of Rohilcund.

4. The Belooch Battalion took part in the siege of Delhi in the campaign of Rohilcund, and in that of Oudh, for the reduction of the province.

5. Both regiments have been frequently engaged.

6. The Commander-in-Chief wishes them a hearty farewell.

*By order of the Right Honorable the Commander-in-Chief,*

**W. MAYHEW, Lieut. Colonel,  
Adjutant General of the Army.**

The regiment arrived at Hyderabad of the following strength, viz: 1042 rank and file.

An immediate reduction took place to 700 rank and file.

For the services of the regiment Lieut.-Colonel Farquhar was pro-

noted to-Colonel and C.B. The names of Lieutenants Beville and Nicholetts were recorded for brevet promotion, which however neither officer ever received. But the services of the Native Officers were handsomely recognised, and the undermentioned received the "Order of Merit" for gallant and faithful services performed during the Campaign in 1857, 58, 59—recorded as above :—

|          |     |                 |     |            |
|----------|-----|-----------------|-----|------------|
| Subadar. | ... | Khyroola Khan.  | ... | 3rd Class. |
| "        | ... | Hajee Khan      | ... | do.        |
| "        | ... | Zureef Khan     | ... | do.        |
| "        | ... | Prand Khan      | ... | do.        |
| "        | ... | Sewchurn Missar | ... | do.        |

(The latter very deserving officer who had served as Native Adjutant to the regiment throughout the campaign, and shewn great devotion and loyalty, died soon after the Regiment had returned to Hyderabad, from the effects of the fatigue and exposure he had undergone, having previously been promoted to the 2nd class of the order.)

|          |     |                       |     |            |
|----------|-----|-----------------------|-----|------------|
| Subadar  | ... | Ellahee Bux           | ... | 3rd Class. |
| "        | ... | Peer Bux              | ... | do.        |
| Havildar | ... | Mahomed Akber Khan... | ... | do.        |

In reference to this Havildar I feel bound to record his heroic conduct in the storming of the Magazine at Delhi by the 61st Queen's, 4th Punjab Rifles, and head quarters wing 1st Belooches.

The Troops having gained an elevated position were exposed to a murderous fire from the enemy, who were curious to relate, in a strong position underneath the assailants, who therefore retired slightly. To throw a shell down for the purpose of dislodging the enemy, volunteers were called. Two gallant fellows of the 61st were shot one after another, a temporary lull ensuing Private Mahomed Akbar Khan stepped forward, and though received with a volley he succeeded in effecting the desired object, the shell dislodging the foe. His commanding officer rewarded him by making him a Lance Naique, but the writer had the satisfaction of bringing his conduct to the notice of Lord Canning, who immediately in general orders promoted him to Havildar, conferring on him the 3rd class Order of Merit. At Kussia Rampore he was foremost in that fight, shot through the chest close to his Commandant who lost his leg. The Regiment remained at Hyderabad until it moved to Kurrachee towards the end of 1860.

1861. On the 1st January 1861, the regiment was reduced from ten to eight companies and to 600 privates.

In July the designation was changed from "1st Belooch Extra Regiment" to 27th Regiment N. I. or 1st Belooch Regiment.

On the 22nd April 1862, the regiment received a new set of colors ;—they were presented at Kurrachee by Major General Cunninghame, C. B.

1862. The Regiment moved to Hyderabad in August of this year and returned to Kurrachee in September 1863.

The regiment was warned for field service in Abyssinia in August 1867, and left Kurrachee officered as per margin on the 19th November—arriving at Annesley Bay, on the 3rd December was encamped at Zoula, it's first act being to land its baggage, ammunition, tents, &c., carrying the whole and pitching the camp three quarters of a mile from the pier, without assistance of any kind.

Major H. Beville Comt.  
Capt. Hogg, 2nd in Comd.  
Capt. Castell.  
Lieut. Henslow, Qr. Mr.  
Lieut. Brown, Adjt.  
Lieut. Nicolson.  
Lieut. F. A. Beville.  
Asst.-Surg Bonstead.  
" " Banks.

After arrival in Abyssinia the regiment was chiefly employed in making the road through the Passes, where the men went through much manual labour, working 8 hours a day, and doing good service; indeed, aided by the Bombay Sappers and the company of the Marine Battalion, it may be said to have completed the road through the Sooroo Pass.

Lieutenant H. B. Edwards rejoined the regiment from England in January, but from a serious accident after an elephant in which he nearly lost his life was again sent home within a month. He was a great loss, having in that short time earned the thanks of the Commander-in-Chief for his zeal and activity in searching the district for grass.

Early in February, the regiment reached the highlands, two companies joined the pioneer force, the regiment remaining at Adigerat. Before leaving Assistant Surgeon Bonstead was relieved of the Medical charge and Assistant Surgeon Sexton appointed in his stead. This excellent officer was only able to accompany his regiment two marches beyond Antalo, to which place he returned unable from severe illness to proceed. He remained there till the Regiment returned, Asst-Surgeon Richmond of the Bengal Army performing his duties throughout the arduous march to Magdala and back.

On the 4th March, the head quarters wing (the right) proceeded to the front, and joining the first brigade accompanied it to Magdala, where it was present at the battle of Arogee on the 10th April.

The Left wing under Captain Castell leaving Adigerat on the 19th March, and moving with such expedition as to gain for his forced march of 300 miles, made under the greatest difficulties as regards carriage, the honorable record of being "unparalleled during the campaign," reached head quarters on the morning of the 13th April, in time to be present at the attack on and capture of Magdala on that day.

The regiment foremost in the advance had the honor of being selected to form a portion of the rear brigade which accompanied His Excellency Sir Robert Napier, and Staff, leaving Magdala on the 18th April, and reaching Zoolla on the 2nd June where it embarked, on the same day to return to India.

As the steamers were ready to leave Annesley Bay, Sir Robert Napier, G. C. B., G. C. S. I., came on board each steamer to see the regiment before starting. His address to the men of the head quarter ( the Right ) wing was as follows ;—and spoken in Hindustani :

“ Native officers, and men of the Beloochees,—I have called you together to tell you how greatly pleased I have been with the conduct of the regiment during the past campaign. When you came to Abyssinia, you had already established your reputation as a distinguished corps, and now you have added still greater lustre to your name. I have watched you throughout your service with the Abyssinian Force, and have been much gratified with the ready obedience you always yield to your officers.

“ Whenever, I have had to call on you for immediate duty, I have noticed with the utmost satisfaction, the celerity with which you make ready for the work, and the energy with which you carry it out ; and whenever I have called on your regiment for such duty, I have felt satisfied that my wishes would be faithfully executed.

“ Your work in the Passes did you credit, and the steadiness with which you marched through a most difficult country, proved your powers of endurance.

“ When we arrived at Magdala, I was very sorry that your left wing was not with us. I missed them very much, when on the night before the storming of the Fortress, my attendant told me that the left wing had marched into camp ; I said ‘ Now all is well, my Beloochees are here.’

“ You are now about to return to your homes. I hope that you will find your families all well, and prosperous. As you have behaved, while in the field, so continue to behave in cantonments. Be obedient to your officers, and they will, I am sure, do all in their power to make you happy. I bid you farewell, and shall always cherish a warm regard for the Beloochees.”

The above was a speech which sank deep into the hearts of the men, it was one they have never forgotten, one they love to talk about. No men had been harder worked throughout the campaign, but the words of their commander, spoken in their own language, was the most welcome reward that could have been bestowed ; and they left on their return voyage happy in the thought that their labors had been appreciated.

The regiment arrived in the harbour of Kurrachee on the 16th June, proceeding at once to Hydrabad where they received a hearty welcome from all.

The following were the casualties arising from the Abyssinian campaign :—

4 European officers were invalided home to England.

48 men were sent back invalided to India.

7 died in Abyssinia.

5 died after their return, and 24 were permanently invalided.

Major H. Beville, Commandant, was promoted to Lieutenant Colonel and C.B.

Major Hogg, 2nd in Command was promoted to Lieutenant Colonel.

Captain J. Castell was strongly recommended by the Commander-in-Chief for his Brevet Majority.

Subadar Major Simailjee Israel was admitted to the order of British India with the title of Bahadoor, and the regiment in consideration of its services was designated Light Infantry with the approval of Her Gracious Majesty the Queen.

In November the Regiment moved to Kurrachee.

Permanent Commandants of the Belooch Regiment since it was raised.—

|                               |     |                             |
|-------------------------------|-----|-----------------------------|
| Major Jackson                 | ... | from 1844 to 1848.          |
| Lieutenant G. Mayor           | ... | " 1848 to 1851.             |
| Captain (Brevet Major) Holmes | ... | " 1851 to 1853.             |
| Major Farquhar                | ... | " 1853 to 1858.             |
| Lieutenant Beville            | ... | " 1858 to the present time. |

HENRY BEVILLE, *Lieutenant Colonel,*

*Commdt. 1st Belooch Regt.*

*Light Infantry.*

KURRACHEE,  
23<sup>rd</sup> July 1872.



## VII.

## THE SELECTION AND TRAINING OF NATIVE OFFICERS.

THE number of the suggestions which have been made for the improvement of the organization of our Native Army by writers in this Journal and in the Indian Press, shows the prevalence of a conviction that our present system is not what it ought to be, that the result obtained is not commensurate with the expenditure incurred, and that we have not yet hit upon the best means for enlisting the warlike classes of the country in our service. Since writing down my own ideas as to the best method of remedying this weak point in our armour, I have seen the essays on the subject published in the November number of this Journal; one anonymous, the other by Colonel Gordon of the 29th P. I. I do not of course imagine that the subject can be treated as well by an officer of a different branch of the Service, as by the authors of these essays; one of whom at least has had great experience in the actual management of native troops; but still as my suggestions differ in some points from those of the writers who have already published their opinions, it may not be too late to offer them for perusal, and I may perhaps be allowed to hope that the able writers, who have bestowed more time and attention on the subject than I could give to it, will be glad to see that my experience in this country among the natives generally, without any special knowledge of native regiments, has led me to almost the same conclusions as officers who have served themselves in these corps. In the early days of the East India Company, more than one native leader held high command, and attained distinction in our Service; but as Englishmen came out in greater numbers, and our regiments became organized on a regular and uniform pattern, such instances became rare; and long before the mutiny had entirely disappeared. The evil effects which must naturally be the result of shutting out the native gentry from military employment, were long ago foreseen by men who had associated with this class, and who understood their wishes and feelings. To show the truth of this statement we have but to turn to the essays of Sir Henry Lawrence, which were originally published in the *Calcutta Review* on "The Military defence of our Indian Empire," "The Indian Army," and "Army Reform." The first of these appeared soon after the disgrace which he felt our arms in Cabul had sustained, had been effaced, so far as it ever can be effaced, by the successes of Pollock, and before the great battles of the Punjab, which showed more plainly than any previous campaigns, that native armies may be raised in India; to cope with which requires all England's courage and more wisdom than has always been shown in England's councils. The two latter were written in the years immediately preceding the mutiny which Lawrence may be said to have foreseen, when he wrote "There is no doubt that whatever danger may threaten us in India, the greatest is from our own troops." Sir Henry Lawrence carefully examines and comments upon the organization of the native infantry, and strongly animadverts on the anomalous position of the native officers, and the want of a fair field for the energies of ambitious

men, such as would rise to distinction in native states. That this objection still holds good almost, if not quite, to the same extent as in the days when the above was written seems to be universally admitted. The position of native officers is really that of non-commissioned officers, and the natural result is that inefficiency which has generally characterized the class. This was noticed by many at the Dehli Camp last season, where it was necessary for one of the English officers to superintend every operation however simple, to accompany every detachment however small, and generally to take every kind of responsibility just as if the native officers had not been in existence. No doubt for the greater part of our army, we cannot do better than enlist native rank and file and put them under Englishmen, only in that case why pay Jemadars and Soobadars for doing the work of Sergeants? As was said by the great statesman whose essays I have above alluded to, "For the lower orders our Service is a splendid one—but it offers no inducements to superior intellect or more stirring spirits. Men so endowed leave us in disgust. \* \* \* \* Did the times avail, they would raise standards of their own and turn against us the discipline they learnt in our ranks," &c. Now the truth of this cannot be denied, and the only effectual remedy which appears practicable is the one suggested in these essays. The same thing in principle is proposed by Colonel Gordon, and the idea has no doubt occurred to hundreds who have thought at all upon the subject. My plan for carrying this into practise is as follows:—To divide the native Infantry into two classes, and the Cavalry, which would be the most suitable and most popular service for natives of rank, into three. In our first class or regular Infantry, to do away with all native officers above the rank of Jemadar, and forming each battalion of six companies to appoint two English company officers and one Jemadar to 150 rank and file, the Commandant and the Adjutant would make the total number of English combatant officers fourteen. This is, I think, the lowest number of English officers admissible for any native regiment, in which there does not exist a very superior and trustworthy class of native officers. To each of these regiments could be attached one or two cadets, natives of good family and fair education, for military education; they need not be paid, but in order that men of small income might keep up a creditable appearance, the Government should provide them with transport for their baggage, horse allowance that they might be decently mounted on the march, and such other advantages as might seem advisable. They should be selected with great care on the recommendation of the Commissioners and Political Officers, and those who after two or three years service showed themselves smart and intelligent officers would be commissioned as Jemadars in Irregular regiments. These latter corps might constitute at first only a fourth or fifth of our whole force, and afterwards be increased to one-third; and should be organized on our present system, but the native officers being selected from a better class of men to begin with, and being more intelligently instructed in all ordinary military duties, such as attack and defence of villages, redoubts and out-posts, &c., it would be quite sufficient to allow four Englishmen to each regiment, so that under ordinary circumstances

the command of the whole, or of a wing detached for special duties, would not devolve upon a native. The English officers would supply the staff, but the companies would be commanded by natives, and I do not suppose that any one who is really acquainted with the abilities and the character of the natives of this country, will maintain that a sufficient number of men possessed of the requisite innate talent and courage, could not be found for these duties. The attempt to find them however if not made among the right classes, the true nobility of Hindustan, whether in Rajpootana or Siad, in Oudh or the Punjab would only end in a lamentable failure. A large saving would of course result from the reduction of the number of English officers in these regiments, as well as from the reduction of the native officers in the regular Infantry, and this would be set against the cost of the increase of British officers in the latter (which increase, irrespective of all other charges, has been stated to be a pressing necessity,) and it would also be partly absorbed by the higher rates of pay which must be given in the Irregular corps to the native officers.

Were such a system as this once fairly started, and the sons of some of our great feudatories attracted to our service by the offer of real military rank, by good pay and by the prospect of distinction in future wars, there can be little doubt that before long hundreds of such men would seek the honor of a commission in Her Majesty's service in preference to the command of a motley crowd of ill-armed and ill-disciplined retainers, such as at present constitute the armies of many native courts. Should this be the result of the experiment, then we shall have made a gigantic step towards conciliating that class which for many reasons deserves good treatment at our hands, and towards attaching to our rule those who must always have great influence over the masses of their fellow countrymen, and moreover the diminution of these independent forces now so uselessly maintained is itself very much to be desired.

The British officers for these corps must be selected with great care, and should consist entirely of men who would take a pride in their regiments, and, above all, treat their native brother officers as comrades and gentlemen. Careful selection with regard to these points is practicable for a part, even for half an army, for the whole it would be impossible. Old non-commissioned officers and Jemadars of the regular regiments would have to be compensated for consequent loss of promotion, by a small increase to their pensions, that in their old age they might live in greater comfort among their friends, or also by appointments to local or reserve battalions if any should be formed. It is very probable that after a few years it would be found advisable to have no Jemadars, even in the regular regiments, but to introduce Havildar Majors in their stead, a result which is in one respect at least very desirable, for it is absurd that a commission which in almost every country is considered an honorable distinction for a gentleman, should in India be given to any soldier who has served long without misbehaving, and who knows his drill well, though probably not half so intelligent or self-reliant

as an average English Sergeant. The Cavalry do not seem fairly open to the criticism which has been so generally applied to the Infantry, but still I think that they might be improved in a similar manner, considering one-half or two-thirds of our regiments are regulars, with an increased number of English officers and with hardly any native officers, but with a few cadets in each regiment for instruction. The remainder would be as at present Irregulars, but the European officers slightly diminished, and the position and responsibilities of the native officers greatly improved; the latter would of course be selected from those cadets who during their time of probation had shown themselves worthy of a commission.

Lastly, I would suggest that one or two Cavalry regiments should be officered almost entirely by natives, the Commandant and 2nd in Command only being Englishmen; this would afford opportunities for the bestowal of suitable rank on the best among the native officers, and on the sons of faithful allies, such as the Maharajah of Pattiala, if they evinced military talent; and the experiment would not be a dangerous one as the proportion of Europeans could be afterwards increased if it were found really necessary whenever vacancies occurred. Such changes as this however would be adopted rather for political than for military reasons, and I should have hesitated to record so boldly my opinions on the subject, had I not the support of so many men, the value of whose judgment is universally acknowledged and especially as I have above shown, of Sir Henry Lawrence, who thus sums up his remarks;—"The Irregular Cavalry is a most useful branch of the service, doubly so as providing for military classes that do not fancy our regular service. \* \* \* \* It is the only outlet for the native gentry;" that it might become so by slight modifications of its present organization cannot be doubted, and its value in a campaign is too well-known to admit of dispute. I will not write at any length upon the advisability of forming second battalions and reserves, as this has been already advocated by Colonel Gordon, so much better than I could hope to do. But I would suggest that these should be to some extent utilized as a Military Police, for the preservation of order and prevention of every kind of violence and riot, a task which it must have struck most military men in this country, is not very happily accomplished by the existing Police. The large number of acts of violence, which are constantly heard of, especially attacks on travellers by night, show that it would be no small advantage to have in many districts a well-disciplined and reliable body of men, who would furnish patrols for dangerous roads and neighbourhoods, and be always available when required for the support of the Civil power. They would furnish all guards for jails and court houses, and over treasuries and other public property, and patrols for all cantonment bazars and roads; and if possible for large cities also by night and day, thus rendering it practicable to reduce the present Police force to one-third or one-fourth of its present numbers, and perhaps to be better paid and trained for effective duties. Arrangements should be made for the men to relieve each other regularly by companies at frequent periods, say every

two months, drawing perhaps only two-thirds or a half of their pay when on leave at their homes; and I believe that many sepoys would be glad after 10 or 12 years in the ranks, to take a lower rate of pay and join a local battalion, performing all the duties which I have described above, and saving the country a considerable amount every year. Besides, service of this kind which would allow the men to be near their homes, and to look after their crops, would be very popular among respectable villagers of the fighting castes, and the prospect of enjoying it after a certain number of years' service with the first battalions, would induce many men of the most desirable stamp, to enlist in our regiments. If the regiments were grouped in three as proposed in Colonel Gordon's paper; these corps would form the third Battalions; and in case of war the first battalions would be raised to 1000 or 1200 strong by drafts from the second battalions, and these in turn filled up from the third to their full strength for garrison duties, and prepared to follow the first to the field if necessary, the whole staff of the third battalions being utilized for obtaining and drilling recruits. I will not however attempt to dilate upon the various methods, in which the details of the scheme might be worked out, but hope that my ideas may find favor with soldiers of more experience in this country, who are better acquainted than I am with the shortcomings and exigencies of their branch of the service, and who know better the feelings and wishes of the native soldiery on whose fidelity and efficiency the tranquillity and security of our empire so greatly depend.

G. T. PLUNKETT, *Lieutenant, R. E.*



## VIII.

### ARMY ORGANIZATION, MADRAS ESTABLISHMENT.

*Constitution of an Army.*—A compact, efficient Army so formed that its several parts can be re-inforced at once, on emergency, by trained men.

To be divided into three classes—

|           |     |     |             |
|-----------|-----|-----|-------------|
| 1st Class | ... | ... | Effectives. |
| 2nd Class | ... | ... | Garrison.   |
| 3rd Class | ... | ... | Pensioners. |

to constitute the 1st, 2nd and 3rd Battalions of regiments.

*1st Class or 1st Battalion.*—To be composed of young and hale men, armed with breech-loaders, fully instructed in musketry, outpost duties and the construction of field works, &c., trained as in the Sappers, well paid, suitably dressed and ready equipped in all respects for the Field, officered, under the old organization modified, as follows :

1 Lieutenant Colonel, Commandant.

2 Wing Officers.

4 Wing Subalterns.

1 Adjutant.

1 Quarter Master, to perform the duties of a Wing Subaltern on emergency.

1 Surgeon.

The Wing Subalterns to have charge of a double company, and to take its command dismounted on parade.

When the battalion or half battalion is formed other than in double companies, the Wing Subalterns to exercise a general supervision of double companies, the command of companies being then held by the native officers.

When detached from regimental head quarters with a double company to be mounted.

*Strength.*—Six hundred and forty rank and file, with the usual complement of Native commissioned and non-commissioned officers, divided into eight companies of eighty men each. Should occasion require, the companies to be increased to 100 men or more from the 2nd battalion.

*Period of service.*—Service in this battalion to be limited to sixteen years as a rule, but if found fit by a medical committee to serve as

effectives beyond that time, the period to be extended on the application of the Commandant.

After sixteen years' service the men to be allowed to take their discharge, remain for a further period in the first battalion, or serve in the second or third battalions according to their fitness for the same.

*2nd Class or 2nd Battalion.*—To be composed of older men, unfit for continuous active service, liable to be drafted as occasion may require into the first battalion for active service as a temporary measure, or the whole battalion to take the place of the first battalion.

*Strength.*—Six hundred rank and file, with the usual complement of Native commissioned and non-commissioned officers, officered under the irregular system.

*Distribution.*—These battalions to be localised within certain circles, and form the depots, &c. for the first battalion where all men should be enlisted, and drilled before joining the second battalion.

All recruits to be considered on probation, till fit to join the first battalion.

The men when quite unfit for temporary active service to be transferred to the third battalion.

(*N.B.*—The first battalions would return periodically to the circle of their second battalions.)

*3rd Class or 3rd Battalion.*—To be composed of effective pensioners. Men able to perform garrison duties for short periods. To be called out to do duty as a whole battalion, or to re-inforce the second battalion as occasion may require.

To be drilled monthly and inspected periodically.

Men of this class could efficiently fill numerous posts under Government.

*Strength.*—Six hundred rank and file with the usual complement of Native commissioned and non-commissioned officers. Officered as requirements might demand. One European officer on ordinary occasions might be sufficient.

*Distribution.*—These battalions to be also localised within certain circles; it might not be necessary that they should be so numerous; every second regiment in a circle might have a third battalion.

The men to be liable to serve with any second battalion of their circle on being called out.

*Duty.*—At the head quarters of each battalion a certain number of men, say 3 Native officers, 3 havildars, 3 naiques, 2 buglers and 50 rank and file to be under arms for training, guard duty, cleaning arms, etc., to be relieved monthly.



The permanent staff to consist of—

1 Havildar Major, to perform the duties of drill havildar.

1 Store Havildar.

*Drill and Training.*—Besides the monthly drill for the whole battalion, the men under arms to be drilled and instructed in musketry, &c.

Men absent from monthly drill to receive no extra allowance, and pension to be suspended until they can account satisfactorily for their absence.

*Effective Pensioners not on the strength of a battalion.*—Pensionable to do duty, but not on the strength of the third battalion, would be liable to be called out for duty in the battalion, should vacancies occur or occasion require, subject to a month's training.

These men, to be termed supernumeraries, and supplied with an effective ticket, a certain percentage to carry with it a small yearly gratuity.

*Exchanges.*—Exchanges from employed effective to unemployed effective lists to be allowed, after the month's duty had been performed. Government being put to no expense on this account.

*Non-effective Pensioners.*—Men quite worn out and unable to perform duty of any description, to be on the pension rules, as at present existing, supplied with a non-effective ticket.

*Pay, &c., 1st Battalion.*—Monthly pay of the several grades :—

(Sergeants and corporals to be substituted for the term havildars and naiques.)

|                            |     |     |     |     |    |
|----------------------------|-----|-----|-----|-----|----|
| Sergeants                  | ... | ... | ..  | Rs. | 22 |
| Corporals                  | ... | ... | ... | „   | 16 |
| Buglers                    | ... | ... | ... | „   | 16 |
| Lance Corporals' allowance | ... | ... | ... | „   | 1  |
| Privates                   | ... | ... | ..  | „   | 10 |

Recruits to draw second battalion pay till joining the first battalion, as also all men from first battalion doing duty therewith:

Buglers and privates to receive good conduct pay as at present, but liable to forfeiture as a minor punishment for any period under six months by award of Commandant. The sums collected on this account to be placed to the credit of a fund for the benefit of the regiment.

No compensation to be allowed for dearness of food.

Rations allowed *only* when on active service. On service beyond sea an allowance to be made in lieu of rations.

No batta.

*Free Kits and Huts.*—Recruits to receive a half kit on enlistment, to be completed on leaving to join the first battalion.

The men to be hutted by Government.

Followers to be limited.

*2nd Battalion*—Pay, &c., to be the same as at present, that for Native officers as originally existed.

Men drafted to re-inforce the first battalion to receive the pay granted in that battalion.

Hutted by Government.

*3rd Battalion.*—Allowance as follows, monthly—

|                                    |     |           |                                      |
|------------------------------------|-----|-----------|--------------------------------------|
| <i>Allowances</i> —Native Officers | ... | Rs. 8 & 5 | } in<br>addition<br>to pen-<br>sion. |
| Sergeants                          | ... | " 3       |                                      |
| Corporals                          | ... | " 2       |                                      |
| Bugler                             | ... | " 2       |                                      |
| Privates                           | ... | " 1       |                                      |

*Monthly Duty Allowance.*—When on monthly duty to receive an addition equal to their monthly allowance.

When called out {  
 To re-inforce the second battalion, the pay granted in that battalion without pension.  
 To do duty in a body, in part or the whole battalion, the allowance as granted for monthly duty, with batta if detached from head quarters.

*Hutting.*—When on monthly duty, and if detached from head quarters to be hutted by Government.

#### ALL BATTALIONS.

*Equipment.*—Carbine Snider, Enfield, with short sword bayonets.

Ball bag, waist belt, reserve pouch and braces, brown leather covered buckles.

The braces to cross at the back, to hook on to the waist belt, to support the reserve pouch attached, and to be worn under the jacket.

*Head Dress*—A small roll turban on a blue or red skull cap, the turban foundation so made, that fresh and clean cases can be slipped on when required.

*Jacket*—Short, without collar, open in front to hook at the throat only. No buttons, shoulder straps with the number of regiment.

In hot weather, jacket of serge, same pattern.

*Waistcoat*.—Blue or red, two pockets, serge or drill according to season, to button with cloth buttons, or hook, down the front.

*Trousers*.—Small "*Knickerbockers*," two pockets, with gaiters (buttoned on to the Trousers) to the ankle to button or fasten at the side, a strap and buckle top and bottom.

*Gaiters*.—The gaiters to be made either of close drill or cloth.

In hot weather the trousers and gaiters to be of black drill dyed in the web.

*Cummurbund*.—Red or blue drill. To be rolled flat round the waist. The waist belt to be worn over it.

*Cloak*.—Loose, with button and strap at back. Cape and hood to button on.

The cloth of cloak to be of a light flexible description, color brown, (mud color).

*Shoes*.—Hindoostanee shoe commonly called "*Chérrows*" Broad sole small upper, and coming well up behind and on the instep.

*Canteen dishes*.—1. One small light set, three dishes and one lota to strap in the cloak.

2. One extra large size to carry in kit bag.

*Water Bottle*.—Flat to hold an imperial pint covered with canvass to sling over the shoulder.

*Clothing*.—1st and 2nd Battalions.

*1st and 2nd Battalions*.—Men serving in these Battalions to receive clothing as follows:

The 1st year.

One jacket, one pair woollen trousers and gaiters and one suit of summer clothing.

The following years.

A jacket, a pair of woollen trousers with gaiters, and a suit of summer clothing alternately.

1 pair of shoes yearly.

The clothing to be considered the property of Government for two years.

*3rd Battalions.*—One suit of summer clothing every three years.

One pair of shoes every two years.

To be considered the property of Government for three years.

H. CLARIDGE, LT. COLONEL,

*37th Madras Grenadiers.*



## IX.

# ON THE ORGANIZATION OF A TRANSPORT DEPARTMENT SUITABLE TO THE EXIGENCIES OF THE BRITISH ARMY IN ANY PART OF THE GLOBE.

BY PESHAWUR.

## ESSAY ON ARMY TRANSPORT.

### TABLE OF CONTENTS.

#### Section I. Introductory.

- Comparison of ancient and modern systems of supply.
- Account of systems hitherto used in the English Army
- Table of proportion of transport service to infantry in the various European Armies.
- Amount of stores and food required by an Army, calculated at so many lbs. weight per man, is to serve as basis for calculation of Transport,

#### Section II. Account of Transport system employed in the following campaigns :—

- Prussian campaigns against Austria 1866, and Franco-German War of 1870-71.
- Abyssinian Expedition.
- Red River Expedition.
- Looshai Expedition.
- Lessons to be derived from these.

#### Section III. General considerations regarding Transport, division of the subject into three heads, *viz* :—

- Army Transport.
- Divisional ditto.
- Regimental ditto.
- Adaptation of this system to the British Army at home and abroad, also to the army in India. Elasticity required.
- Organization of a Transport Corps.
- Proposed plan for obtaining horses.
- Adaptation of the scheme to the wants of the Indian Army.

#### Section IV. Army Transport.

- Probable operations of an English Army, and calculations of possible distance of field base from source of supply at home and abroad.
- Railway communications cannot be depended upon.
- Establishment of depots at distances of 60 miles from each other, along the line of march.
- Organization of supply columns.
- Necessaries for an Army—
  - 1st. Food and Commissariat stores.
  - 2nd. Ammunition and ordnance stores.
  - 3rd. Hospitals and medical stores, Treasure convoys.
  - 4th. Reserve of Clothing and Equipments.

5th. Field Post. All calculated at so many lb. weight per man.  
Summary.

Section V. Divisional Transport. Calculated to carry three days' supplies from field base to army.

Also includes Field Bakery, General and Staff Officers' baggage,  
Divisional Hospital Train, Engineers' Park.  
Summary.

Section VI. Regimental Transport.

Division of Regimental baggage into Heavy and Light Equipment to be carried by separate carts.

Detail of Equipment for an Infantry regiment.

Ditto ditto Cavalry.

Artillery baggage provided for.

Engineer ditto not detailed, no authority available.

Section VII. Details of organization of Transport Corps.

Section VIII. March of Baggage Columns.

Conclusion.

## ARMY TRANSPORT.

## SECTION I.—INTRODUCTORY.

IN considering the subject of Army Transport, we find a great difference between ancient and modern war, as regards the method in which armies are equipped and maintained in the field. In olden times, the movements of armies were slow, and this enabled the troops to be supported by the countries in which they moved ; but this plan can only be partially followed in the present time, as it causes delay in the rationing of the army, and it is also impossible to mass troops which are spread over a large tract of country in search of provisions. In the war of 1870-71, the Germans showed that a perfect system of bringing up supplies quickly, enabled their troops to be massed in large numbers, and the numbers of continental modern armies are so great that no country can support them in addition to its own inhabitants in any given district of seven or eight hundred square miles, during a time of war, for more than a few days. This length of time has been calculated to be from three to six days, and if the war be stationary, it can only be carried on, even in the richest country, when the army, by a regular system of supply makes itself independent of the resources of the place.\* Not to make the prosecution of a war press too heavily on the unoffending peasantry of a country, is a policy which bears good fruit, and one that has been pursued by England hitherto, and it is to be hoped will be hereafter, notwithstanding that it means increased carriage and expense. Of course an invaded country must be prepared to suffer to a certain extent, and its resources must be at the disposal of the invader, but these resources, especially in the matter of food and of grain crops, should not be taken advantage of in such quantities as to leave their owners in a state of starvation.

In the Peninsular War, the organised system of the Duke of Wellington in the matter of supplies and transport added materially to the victorious power of the English Army, who never suffered for want of food, while the badly fed French Armies became utterly demoralized in several instances from starvation.

The study of the General Orders in the Wellington Dispatches shew that the system that was introduced by Wellington, was not any pre-arranged and definite system at the beginning of the campaign, but one that was gradually evolved in the course of the war ; in all the records given of the disposition of the Army there is never any mention of any transport corps, and it is not till the march of the Allied Armies to Paris in 1818, that we find the transport entered under the head of the " Royal Waggon Train," in the detail of troops. This shews that the experience gained during the Peninsula War led to an organization suitable for the Army transport. At the end of the war this branch of the service must

\* "The use of Railroads in time of war," communicated by Major General Sir D. Wood, K. C. B., to the Proceedings of R. A. Institution.

have been totally reduced, as it was not till after the Crimean War of 1854, that any attempt was made to put the transport on a suitable footing. The results of this attempt was a failure in the shape of the Military Train. The organization given to the Train combined two faults ; it was too military, and it was inelastic. The train was divided into troops, but the duties assigned to them were not clearly laid down, as to what stores they were to carry, and in what proportions they were to be allotted to the various branches of the service.

The Austro-Prussian War of 1866 showed to what perfection the Prussian Army transport had been developed, and in the subsequent campaign of the German Armies in France, their transport arrangements were the admiration of the military world, and contributed as much as any other cause to the defeat of the French Armies, who were hampered by their baggage and yet starving sometimes for want of food.

It has been the practice in military works, in giving the proportions of troops composing an army, to assign a certain proportion of the whole strength of the army for the transport.

It is doubtful however if the former proportions would in the present day meet the wants of an army, as rapidity of movement is more than ever necessary, and this cannot be obtained without increasing the transport. Increased efficiency in every branch of the service involves also a corresponding increase in the transport.

The following table gives the proportions of the transport to the strength of the Infantry. In the column for the English Army for the year 1869, only half the number of men calculated to belong to the transport of a force in Hozier's Commissariat, have been considered, as the dismounted position of the old Military Train are useless as transport.

The formation of an Army Corps detailed in Hozier's Commissariat is.

|                    |    |                |
|--------------------|----|----------------|
| 10,000 Infantry    | or | 1              |
| 1,800 Cavalry      | or | $\frac{2}{11}$ |
| 2,500 Artillery    | or | $\frac{1}{4}$  |
| 600 Engineers      | or | $\frac{1}{16}$ |
| 600 Military Train | or | $\frac{1}{32}$ |

(300 only reckoned with 400 horses.)

|                             |  |                |
|-----------------------------|--|----------------|
| 350 Army Commissariat Corps |  | $\frac{1}{30}$ |
|-----------------------------|--|----------------|

The Military Train and the Army Commissariat Corps have been metamorphosed into the Army Service Corps, Transport as supply branches, and the numbers too have changed in some degree.



*Comparative tables of proportions of numbers of the various Branches of an Army, with regard to the number of the Infantry.*

|                       | English.               |                         | French.        |                 | Prussia.       | Austria.       | Italy.         |
|-----------------------|------------------------|-------------------------|----------------|-----------------|----------------|----------------|----------------|
|                       | Hozier's Comt Equipmt. | Wellington's Army 1818. | 1853.          | 1870.           | 1867.          | 1857.          | 1867.          |
| Infantry ...          | 1                      | 1                       | 1              | 1               | 1              | 1              | 1              |
| Cavalry ...           | $\frac{2}{11}$         | $\frac{1}{8}$           | $\frac{1}{4}$  | $\frac{1}{8}$   | $\frac{1}{8}$  | $\frac{1}{12}$ | $\frac{1}{16}$ |
| Engineers ...         | $\frac{1}{16}$         | $\frac{1}{20}$          | $\frac{1}{25}$ | $\frac{1}{125}$ | $\frac{1}{28}$ | $\frac{1}{28}$ | $\frac{1}{85}$ |
| Artillery ...         | $\frac{1}{4}$          | $\frac{1}{12}$          | $\frac{1}{8}$  | $\frac{1}{8}$   | ...            | $\frac{1}{13}$ | ...            |
| Transport Service ... | $\frac{1}{33}$         | $\frac{1}{25}$          | $\frac{1}{65}$ | $\frac{1}{62}$  | $\frac{1}{22}$ | ...            | $\frac{1}{80}$ |
| Guns per 1000 ...     | 3                      | 3                       | 2              | 4               | 2.6            | 3.2            | 2.2            |

It will be observed that the present transport system of Prussia is numerically about the same as that of the English Army in 1818, the Prussians have kept up their transport system, while ours has been allowed to die out.

The proportions of the number of men by no means indicate the relative capabilities of the transport, as will be seen, for this the number of horses must be considered. We find in

|                                     | Total Force. | TRANSPORT. |         | Proportion of Horses to force. |
|-------------------------------------|--------------|------------|---------|--------------------------------|
|                                     |              | Men.       | Horses. |                                |
| Hozier's Commissariat Equipment ... | 16,000       | 600        | 400     | $\frac{1}{40}$                 |
| Wellington's Army 1818 ...          | 20,115       | 543        | 749     | $\frac{1}{27}$                 |
| Prussian Army Corps of 1867         | 32,000       | 1162       | 1299    | $\frac{1}{25}$                 |

Hozier gives no authority for the number of transport men and horses assigned above, but the numbers seem decidedly small, and it would be safer to take the numbers of the transport attached to the army of occupation in France, as a better example of what the transport of an army should be, as it may be safely assumed that the arrangements of the British transport service were then on a very good footing. The proportion of horses tallies in the case of the Prussian Army of 1867 and the English Army of 1818, rather nearly; and as the Prussian system has been always considered as the perfection of transport, this is an additional reason for considering Hozier's estimate as based too low. Since the publication of the Army Equipment book on the Commissariat, the new system of the Control department has come into existence, and in the course of the changes the strength of a company of the Transport branch has been fixed at 130 non-commissioned officers and men, and ninety-one horses (the strength of a troop of the Military Train used to be about sixty-seven non-commissioned officers and thirty-eight horses). This a little step in the right direction, for instead of having 400 horses for 600 men, the number would be now 420, but this falls far short of the numbers that there would be under the Prussian system, when for 600 men the number of horses would be 671, or 250 more than the present proportion can boast, and it must be borne in mind that the Prussians do not carry any camp equipage, while the English army is generally under canvas in the field.

Instead of reckoning the proportion of transport in terms of either the whole or a part of a force such as the Infantry, it would seem desirable to try and introduce a more accurate system, in which the calculation for transport should depend on a certain fixed weight of baggage including supplies, for each man in the field, when once this can be done, a simple calculation will prescribe the quantity of transport necessary for an army. It will be the object of the following pages to solve this problem—and to adapt an organization for the transport of the army, suitable in its application to the existing army system, both Home and Indian.

---

## SECTION II.

Previous to any proposals or plans for the Transport service of an army, it would be advisable to ascertain what is the existing system of the Model Transport of the Prussian Army, which contributed so largely to their victories over the French, and also to glance at another model transport, which was organized for the Abyssinian Expedition and stood the test of service, and unfortunately for the army was broken up at the close of the expedition. The Red River and Looshai expeditions also models of their kind, must be noticed and then we shall have specimens of the three kinds of transport that are available for field service. The first gives the transport adapted to wheeled vehicles; the second, that for mules or pack animals, while the last mentioned expeditions were those in which, portage was almost exclusively employed.

As every one knows the Prussian army system is formed of separate corps or armies each complete in itself. Every possible want of an army is provided for, and even when brought suddenly together, on the order for mobilization, the whole machinery works nearly as well as it does after several months' use. The detail of a Prussian Corps d'Armee in the field is a fixed aggregate of troops as under :—

|                                  |                                       |     |        |
|----------------------------------|---------------------------------------|-----|--------|
| 9                                | Infantry Regiments of two Battalions  | ... | 18,000 |
| 1                                | Battalion Rifles                      | ... | 1,000  |
| 6                                | Regiments of Cavalry 4 Squadrons      | ... | 3,600  |
| 1                                | Regiment of Artillery (Field) 96 guns | ... | 3,731  |
| 1                                | Battalion Pioneers                    | ... | 1,000  |
| 1                                | ditto Train                           | ... | 1,000  |
| <hr/>                            |                                       |     |        |
|                                  |                                       |     | 28,381 |
| or with the non-combatants about |                                       |     |        |
|                                  |                                       | ... | 30,000 |

To each of the regiments in the field are attached wagons for the stores and ammunition of the regiment ; and the regiment of artillery forms column for the carriage of the first reserves of ammunition in the field. The Pioneers have wagons allotted to them for the transport of tools and bridge making materials ; a special service is devoted to the Field Telegraph and Post, and for keeping up all these supplies to the proper extent there is a Reserve Park column. Having provided for all these wants of an army, it remains to assign its duties to the Battalion of the Train. This forms five proviant, or supply columns, three heavy and three light medical or ambulance trains, with three sanitary detachments attached to them, one field bakery and one horse depot. In the protection of the trains a train escort is provided.

The numbers given by Hozier in the seven weeks war of 1866, still form a guide to the establishment of the various trains and columns, but the experience of that campaign led to certain improvements in the Transport Service. But without any official authority to shew wherein the changes occurred, there does not seem any necessity to alter his figures as they are somewhat closely followed by Baron Rustan in his account of the War with the exception of the heavy Medical Train :—

|                             | HOZIER.   |      |         |         | RUSTAN.   |      |         |         |
|-----------------------------|-----------|------|---------|---------|-----------|------|---------|---------|
|                             | Officers. | Men. | Horses. | Wagons. | Officers. | Men. | Horses. | Wagons. |
| 5 Proviant Columns ...      | 10        | 480  | 805     | 160     | ...       | ...  | ...     | 160     |
| 3 Heavy Medical Trains .... | 52        | 352  | 207     | 33      | ...       | ...  | ...     | ...     |
| 3 Light       "       " ... | 39        | 212  | 168     | 30      | ...       | ...  | ...     | 30      |
| 3 Sanitary Detachments ...  | ...       | ...  | ...     | ...     | ...       | ...  | ...     | ...     |
| 1 Field Bakery ...          | 1         | 118  | 27      | 5       | ...       | ...  | ...     | 5       |
| 1 Horse Depot ...           | 5         | 93   | 166     | ...     | ...       | ...  | 170     | 1       |
| 1 Train Escort ...          | 6         | 120  | 120     | ...     | ...       | ...  | 120     | 1       |
| TOTAL ...                   | 113       | 1375 | 1493    | 228     | ...       | ...  | 290     | 197     |

The author of "Modern War" gives a general total of 1,000 men and 1,500 horses for each Corps d'Armée Train, so all three totals are at variance.

The five proviant columns carry supplies for three days, each column returning when empty to the base for more supplies.

The three Heavy and three Light Medical Trains afford carriage and assistance for 1,200 men or 4 per cent. in a Corps d'Armée of 30,000 men. Hozier says, that an allowance is made for more than 20 per cent. of the men of each Corps d'Armée being hors de combat. When a Corps d'Armée is broken up a certain amount of these columns is attached to each part of the force.

The Train Battalion consists of two squadrons, one to each division of the Corps d'Armée and each squadron is divided into two half squadrons, one for each brigade.

The Regiment of Artillery attached to a Corps d'Armée forms nine ammunition columns divided into two divisions, one of five and the other four columns :—

|               |                |                 |                 |            |
|---------------|----------------|-----------------|-----------------|------------|
| 5 columns ... | 2 officers ... | 175 men ...     | 174 horse ...   | 25 wagons. |
| 4       " ... | 2       " ...  | 173       " ... | 170       " ... | 24       " |

"This division is made to facilitate the despatch of the two divisions to the Ammunition Depot; to have the wagons refilled, or to allow one division to be attached to an Infantry division, in which case four columns can be attached to the Infantry division and one to the Cavalry division. The Reserve Park, from which these columns are refilled is divided into two divisions, each of which has a strength of 9 officers, 195 men, 264 wagons, and is further sub-divided into eight columns of 33 wagons. These columns are horsed by horses procured in the country where the war is being carried on, and are brought to the theatre of war by any means of transport available. The Reserve Park is generally two marches in rear of the army.

Rustan gives the number of the Reserve Park columns, which can be formed as required, at 5 divisions of 80 wagons each.

Each battallion of Pioneers or Engineers has four companies in peace time, but in the field it is formed into three companies of equal strength with a reserve company at the base. To these are added a column of Pioneer implements, a train of advance guard Bridges or a Pontoon Train.—The Pioneer battallions form a nucleus of men for the Railway and Telegraph detachments. Rustan, from whose work the above is extracted give no numbers of men, horses, or wagons for the above trains.

Hozier gives the composition of a field Telegraph Division attached to head quarters, as 3 officers, 137 men, 73 horses, 10 wagons, 2 operating carriages, and 8 containing wires and poles for 40 miles, and five miles of insulated wire for lakes and rivers.

#### THE FIELD POST.

"All sorts of extraordinary things were sent through the Field Post from Germany for the officers of the army round Metz; such as "a cake of chocolate, a square tin filled with schnapps, a packet of tea, "and a square cake of fresh butter. The organization of this excellent "branch of the Service shewed with what ease and regularity a large "army can receive and despatch letters to any part of the world."—*Modern War.*

The proportion of weight of stores requiring transport, exclusive of ammunition, for each soldier in the field can be roughly calculated from the figures extracted from Hozier's "Seven Weeks' War." Allowing the load of the wagons to be each 30 cwt. as under, and 30,000 men in the *corps d'armée*—

|                       |     |        |     | Per man. |
|-----------------------|-----|--------|-----|----------|
| Commissariat supplies | 160 | wagons | ... | 17-9 lbs |
| Heavy Medical Train   | ... | ...    | ... | 3-6      |
| Light "               | ... | ...    | ... | 3-3      |
| Field Bakery          | ... | ...    | ... | 0-5      |
| Horse Depot           | ... | ...    | ... | 0-1      |
| Train Escort          | ... | ...    | ... | 0-1      |
| Total ...             |     |        |     | 25-5.    |

This does not include the Regimental Carriage, which is described in Hozier, as requiring for an Infantry regiment 1 wagon, called the Montirung wagon, which carries the Paymaster's books, money chest and a certain proportion of materiel for the repair of arms and clothing. It is drawn by four horses; a hospital cart with two horses; an officer's baggage wagon with four horses, and four pack horses to carry the books of the four companies of a regiment.

The baggage of a Cavalry regiment on service consists of one medicine cart with two horses, one field forge with two horses, four squadron wagons with two horses each, and one officers' baggage wagon with four horses. The weight per man allowed for Regimental carriage may therefore be taken at

|                                  |              |
|----------------------------------|--------------|
| In an Infantry Regiment per man, | about 5 lbs. |
| „ Cavalry Regiment               | „ 20 lbs.    |

The proportion of weight of ammunition carried by the artillery, including gun ammunition, is per man 5·6 lbs.

### THE ABYSSINIAN EXPEDITION.

The campaign in Abyssinia, being one in which the transport of the army depended almost entirely on pack animals, it is advisable to study the lessons which it taught, which may help in forming a transport department capable of undertaking, if need were, a similar task.

The Abyssinian Expedition was a mountain campaign on one line of war, extending upwards of 350 miles from the sea to Magdala, which the army traversed in 36 marches; the distance and number of marches give no idea of the difficulties of the road, which had to be made to allow of the advance of the army. The force of two brigades in the field and a reserve at the base, numbered about 12,000 soldiers, and 30,000 followers with about 30,000 animals, including of course those for the transport corps.

Each soldier was allowed a blanket and a waterproof sheet, in addition to his kit, and sometimes had to carry them when transport failed. Tents were supplied to the force at the rate of one to twelve officers and twenty soldiers. Each Infantry regiment carried a supply of its intrenching tools, and thus became Pioneers.

The Cavalry were employed chiefly in guarding communications.

The guns of the 12-pr. Armstrong Battery, as also the 8-inch mortars were carried on elephants, but there were two mountain batteries of 7-pr. steel guns, carried on mules.

At first the organization of the transport corps was one of some difficulty, as men were collected from all countries, to serve as muleteers

who had never seen a mule ; ultimately these men were discharged on the arrival of some 5,000 Punjabees, who answered admirably, and without whom the transport could not have worked. When the train was fully organized, it consisted of

- 7 divisions of Mules.
- 3     "     "     Pack Bullocks.
- 3     "     "     Camels.
- 1     "     "     Carts.

Four of the mule divisions were in course of time separated, and named "The Highland Transport."

The strength of the Camel and Pack Bullock and Cart divisions is not detailed in the General Order containing the report on the working of transport corps, beyond stating that each division of 2,000 animals could not be supervised by three officers. The detail of the Mule Division of the Highland Transport is given as under :—

|                         |     |     |                                  |
|-------------------------|-----|-----|----------------------------------|
| Captain                 | ... | 1   |                                  |
| Subalterns              | ... | 3   |                                  |
| European Inspectors     | ... | 4   | selected from British Regiments. |
| Jemadars                | ... | 20  | or Troop Sergeant Majors.        |
| Duffadars               | ... | 80  | or Sergeants.                    |
| Muleteers               | ... | 667 |                                  |
| <i>Artificers.</i>      |     |     |                                  |
| First Class Nalbunds    | ... | 32  | or Farriers                      |
| Second     "     "      | ... | 10  | ditto.                           |
| Head Native Blacksmiths | ... | 10  |                                  |
| Second Class     Do.    | ... | 10  |                                  |
| Bheesteers              | ... | 10  |                                  |
| Rope Makers             | ... | 2   |                                  |
| Salootree               | ... | 1   | Native Veterinary Surgeon.       |
| Head Saddler            | ... | 1   |                                  |
| Asst.     do.           | ... | 1   |                                  |

There were 2000 mules in a division, which were divided into troops of 150 mules.

The strength of the Highland Transport in mules is given as under :—

|           | No. of mules | No. sick. | Proportion of sick. |
|-----------|--------------|-----------|---------------------|
| 1st March | ...5412      | 1002      | $\frac{1}{5}$       |
| 1st April | Ditto        | ...6661   | $\frac{1}{6}$       |
| 1st May   | Ditto        | ...7690   | $\frac{1}{4}$       |

Thus to meet casualties, a large allowance must be made, and the highest proportion or 25 per cent. may be safely taken as a guide in making the calculation.

Out of the number sick, 2,418 mules were discharged from hospital and sent to work ; but this leaves a balance of over 1,500, whose services were quite lost, or in other words one-fifth of the whole number of baggage animals would be required to supply casualties arising from service.

The work of the Highland Transport consisted in carrying baggage, ammunition, hospital stores and commissariat supplies for one month. Allowing two hundred-weight for the load of a mule, and taking the largest number of mules employed in one month, the total weight of stores transported during the month would have been  $2 \times 30 \times 7690 = 461,400$  cwt. The strength of the force being 42,000 men, combatants and followers, the weight transported was very nearly 11 cwt. per man.

Without going further into the detail of the expedition, it may suffice to give the deductions made from the perusal of the General Order above referred to, relative to the Abyssinian Transport Corps. These are—

1st. That a collection of men and animals does not constitute a Transport service.

2nd. That as soon as an organization is detailed, order is rapidly introduced.

3rd. That young and unbroken animals should not be sent on an expedition.

4th. That the number of drivers should be one to every pack animal.

5th. That wheeled vehicles should be used wherever the country will admit of their employment.

6th. That a suitable veterinary establishment should accompany every transport train to look after sick animals.

7th. That "the experience of the Abyssinian Campaign," as stated by the Director of Transports in the concluding paragraph of his report, "shows the necessity of keeping up the nucleus of a Transport Train."

---

### THE RED RIVER EXPEDITION.

A small expedition was despatched in the summer of 1870 to the Red River in North America, composed of the following troops :—1st battalion 60th Rifles, 2nd battalion Canadian Militia, a detachment Royal Engineers, and a detachment Royal Artillery, with 4 steel 7 pounder guns. As it was an expedition, that was unique of its kind, and such as will never be seen again, it deserves a notice, though the lessons it teaches as regards transport are rather of a negative kind. The expedition



was "en l'air" without a base; for when once the force left the extremity of civilization, the troops carried two months' supplies with them, and their base was virtually abandoned; consequently as an example of a campaign in which the supplies require to be regularly forwarded by means of an organized transport, it is useless; but there are two points in connection with the campaign that deserve to be recorded. Had there been an enemy met with at any of the portages, where the troops were employed in carrying the baggage, stores and boats from one lake to another, the success of the expedition might have been jeopardized. The employment of the troops themselves to act as transport did not in this occasion militate with their work as soldiers, and the adaptability of the British soldier to hard service, and the unaccustomed labor of carrying loads, shews that there are qualities latent in him, which only require an opportunity to become evident, but the precedent however of making soldiers carry loads, acting as their own transport, is one to be avoided; not so, the second point, which it is to be hoped will rather be followed for the future, and that is, that there was no rum carried on the expedition. Notwithstanding the constant exposure to wet, either from rain or from getting into the water to lighten the boats when they ran aground, no evil effects resulted from this enforced total abstinence, in fact there was no sickness whatever.

Whether the example, thus shewn, will ever be followed in campaigns hereafter it is impossible to say, but the bare fact of one expedition having been successfully carried out without a supply of spirits, it is possible that others hereafter may be undertaken in the same way.

---

### THE LOOSHAH EXPEDITION.

The Loosha Expedition was divided into two columns, the transport of which from their bases of operations depended entirely on coolies or porters, when the advance was made into a hilly jungly country without roads. The coolies were formed into corps of about 3,000 men each, with three European officers; the load of each coolie was limited to 20 seers or 40 lbs; he had to carry in addition his personal baggage which weighed 22lbs. The half mountain battery of 7-pr. steel guns and 5½ mortars which was attached to each column was originally supplied with elephants, whose loads were to have been about 7 maunds; some of the loads could not be reduced to this light weight; but it was soon found that loaded elephants were not adapted to the country and the battery was supplied with coolie carriage. Each column was composed of three regiments of Native Infantry, one company of Sappers and a half battery, making a total number of about 2,000 fighting men; and moved on a single line of operations. The weight of baggage allowed was 20 seers for a British officer and 6 seers per native soldier. The latter had to carry, including the weight of his arms and accoutrements, a great coat, waterproof sheet, two days' rations, 60 rounds of ammunition, making a total weight of 42lbs. 8 oz. The amount of rations al-

lowed was about 4 lbs. per European officer and 1½lbs per native soldier. Eight days' food was to accompany the force, and 15 days' food to be at the nearest advanced depot. The rations included a dram of spirits for the natives and two drams for the Europeans daily.

During the conveyance of the coolies engaged for the coolie corps to the bases of operations of the left column, cholera broke out, and there was a great loss of men from this cause at the beginning and during the continuance of the expedition. The want of medical attendants for the coolie corps was particularly felt.

The great lesson taught by this expedition was the unsatisfactory nature of coolie transport. When a man carries only forty pounds of stores, and is fed at the rate of 1½lbs. a day, it is evident, that if he carried his own rations he could only proceed for about 26 days, without having another man told off to supply him with provisions. When some men are employed in the carriage of stores, other than rations, the distance to which the ration coolies can proceed is considerably reduced, for if a ration coolie were calculated to supply four men, he could only advance for about seven days. In both the columns of the expedition, the rapid advance of the troops into the enemy's country was as much hampered by this difficulty, as by the natural obstacles of the country. If however it is necessary to employ coolie transport exclusively, it would be advisable to have special medical officers and also more military or civil officers to look after them. With three officers attached to 2,000 men, it is easy to conceive that there should be a want of supervision, even if the men were collected in one place, and when they are spread over a hundred miles of country, this want of supervision becomes very much increased.

---

### SECTION III. GENERAL CONSIDERATIONS REGARDING TRANSPORT.

The comprehensive nature of the subject at the first glance would lead to the belief that it would be almost impossible to lay down any organization, which should provide for the transport wants of the English army, employed as it is in different parts of the world, having to deal with enemies of various nations, in various climates.

How can an organization be detailed, it may be asked, which shall be as suitable in its application to a mountain expedition in the Looshai country, or to a continental campaign in Europe. It is only by the resolution of the question to first principles, that a satisfactory answer can be obtained. In both cases, or in fact, in every movement of troops during a time of war, the men require to be fed, clothed and equipped, or else the result of the expedition will be a failure. The food must be provided daily, and the stock of ammunition must be kept replenished, to prevent the possibility of disaster; and the problem is, how is this to be done in a systematic and organized manner, so that every one in the army should know where to look for his supplies.

In all warfare, there are places selected either from strategic or geographical considerations where the base of operations is placed ; as the distance of the army from the base increases fixed bases of operations are decided on, from whence the supplies are distributed to the army. Hence the organization of the Transport Service must be such, that there must be means of communication on the one hand from the field base of operations to the general base, and on the other hand with the army in the field ; that is, there are two branches of army transport, separate, but complementary one to the other. There is also another branch, the regimental transport, necessary to keep a regiment in the field complete in its equipments and to enable it to possess more mobility than if it depended on the army transport alone. The subject then is divided into three heads.

1st. The means of transport between the bases of operations which may be called the Army Transport.

2nd. The means of distributing supplies from the field base to the army, which should be styled the Divisional Transport.

3rd. The Regimental Transport.

The first branch of the transport depends on two variable considerations, first the number of men in the army, and secondly the distances between the bases.

The second branch, or the Divisional Transport does not possess such variable data to work on, as the distance of the field base would seldom exceed a day's march in rear of the army ; and secondly, the number of men in a division, or corps d'armee, though it is not accurately laid down, would be less variable, so that a transport service could be decided for it, with a certain amount of expansiveness, to allow for this variation. The regimental transport can be accurately fixed, if the strength of the battalion be known. This in time of war is generally a fixed quantity, liable rather to decrease than to increase.

It is possible for nations on the continent of Europe, whose campaigns are fought on ground, every inch of which is or ought to be known, to detail a regular organization of the transport services, adapted to the various army systems, which shall provide for the wants of their armies, but these organizations, however perfect they may be, and capable of supplying every want, are still further supplemented by the resources of the country in which a war is to be prosecuted. With careful enquiries made beforehand, the capabilities of each country are perfectly known, so that on arrival at any place, it is known beforehand exactly what it can be made to furnish. But this branch of the Intelligence department has only lately been recognized in the British army, and therefore but little reliance can be placed on the resources of a country, as a rule, as regards the operations of the British Transport. In India however, the case is different, as its resources as regards carriage are accurately known, but India can hardly now be looked upon, as a foreign country. In considering the subject of transport in the following paper, notwithstanding that the majority of British troops on foreign service, are out in India, the organization for general service will be detailed chiefly as

regards other countries, after which the adaptibility of the means of carriage in India will be touched upon. The system would be the same, but necessarily modified in some cases by the difference of climate, and of transport animals.

In time of peace we find that, as regards the Commissariat supply branch, all provisions and stores are delivered when required by contractors, and distributed by a military or departmental agency. In the case of ordnance stores, these are delivered in like manner by manufacturing departments or contractors, to the arsenals or military store depots, and distributed thence by the various means of military and private transport available. In time of peace, no fault can be found with this arrangement, except that it is no preparation for times of war; as, as soon as a war is undertaken a new system, hurriedly put together, is brought into use, the result being expense to the state. A system, therefore, that can be adapted to meet the requirements of the army in time of peace, as well as that of war; which would be elastic enough to expand when required, and to contract into its former limits when peace was restored, would therefore be a *sine qua non*.

The Military Train in former days, and its descendant the Army Service Corps, were both designed with this object; but though the nucleus, as it was termed of the Transport Service was formed, yet no measures were ever devised by which its expansion could be secured; and the small number of the Military Train, and their inadaptibility for service when used, soon converted them in time of war to a squadron of Hussars, in which capacity they were more used and useful than as drivers of a Train.

The theatre of a war cannot be made to suit a line of railway; and, though much may be done in the way of improving communications in the rear of an army, by temporary lines of railroad and traction engines, yet the only reliable means of transport available, according to the nature of the country in which operations are conducted, are either wheeled vehicles, pack animals and porters, or a combination of all three.

The task of supplying the base of operations can be left to the contractors as in time of peace, beyond that point this duty, involving as it does a certain amount of risk, requires a military or even semi-military organization, in which a fellow feeling for their comrades in arms should act as an incentive, which would be wanting if the supply and transport service was left in the hands of a contractor; besides which, a military organization would bring the transport service under the action of military law, a very necessary arrangement, where quick and ready obedience has to be enforced.

The want of any special transport troops has hitherto led to the Transport Service being ignored, and looked down on, and this feeling has been fostered among the Military Train, who preferred to be considered and to act as light cavalry, rather than to perform their regular duties. While this feeling is extant, it will be impossible to raise a transport

service, or to get good officers and men to enter it; and the idea ought to be combated in every possible way.

To enlist young men into a service, whose movements are necessarily slow, is a mistake; if older men are available, and it is to men who have already served their first period of service or have at least served several years in the mounted branches that the recruiting department of the transport service should look to, to obtain the necessary stamp of men.

The present organization of the Army Service Corps affords sufficient men for the ordinary peace establishment garrison of all the large towns and the standing camps in England and Ireland; but as no method apparently has been as yet devised, how, like its predecessor the Military Train, the sudden expansion of Army Service Corps was to be effected in time of war, the following plan is proposed with diffidence; but it is a feasible one, if the spirit of the nation be not against it. To train men and horses for their special transport duties requires time, and it is this element that will be wanting, if a sudden and rapid increase of the Transport Service be required in the event of war breaking out, even if fresh men and horses be forthcoming.

With our voluntary system of enlistment we cannot copy the Prussian model, of raising their transport service from the peace to the war footing, on the mobilization of the corps d'armee to which it belongs. We must have recourse to other arrangements, more suitable to the spirit of the English nation. The short term system of service applied to the cavalry and artillery branches of the army would supply men, who would be available for service in the first class reserves of these branches, and it is to these men that we must look for the means of increasing our transport service when required. The second class reserve, men of these branches, would, like those of the infantry, be available, but only for home-service. It may be argued that by withdrawing these men from the opportunity of serving in their former corps, it will not be so easy to raise the strength of these to the war footing when required, and this is true, but as a small force well equipped is better than a larger force without the means of transport, this argument ought not be allowed to weigh against the employment of reserve cavalry and mounted artillery soldiers in the Army Service Corps. The only point to be decided is whether men who have served in the ranks of the active army would serve during the time of war in the transport service. This is however a mere question of money; a higher scale of pay would tempt men, and in time would render the service so popular, that when the prejudice against the service had disappeared the scale of pay might be reduced.

There are two plans for obtaining horses in time of need, both of which have received a practical trial. These are—first, for the state to own the horses and make them over, to be kept and used by farmers and others till wanted; and the second plan, is for the state to mark out beforehand the horses likely to be requisitioned for service, and to take

them when wanted indemnifying their owners at a fixed rate. The French tried the first plan which is open to the great objection, that there is no security that the horses so made over would receive proper care and attention, except by requiring them to be constantly inspected; the Germans make use of the second plan and find it work well in practice. This is one of the few points of the German army system that could be copied in England.

The resources of each military district in the way of horseflesh should be carefully examined; all horses suitable for draught purposes, not employed in agriculture, should be liable to be detailed for Transport Service, a portion of the horse tax on such animals should be remitted, a reasonable amount of compensation being granted for their employment in Camps of Exercise or similar purposes, or when taken away for musters and inspections, while a fixed amount regulated somewhat in accordance with the age and value of the horse, would be paid to the owner in the event of its being requisitioned for service.

A register of all these horses would be kept in the Staff office of each military district, and the first and second class reserve men residing in the district would each have a pair of horses assigned to them, with which they would have to appear at the periodical musters. The wagons and harness belonging to the Army Transport would be kept in store at the head quarters of the district under a responsible Transport or Control Officer, so that on the order for the mobilization of the Transport Train being given, every part of it would be ready to move at a very short notice.

The second class reserve men would of course belong to the Home Service Train which would be specially attached for the service of the reserves for home service.

The number of men and horses necessary for these trains depend, for the Army Transport Train, on the number of men that would form an army for operations out of England, while for the Home Service Train, it would depend on the number of the Home Reserves Militia and Volunteers; this number can be calculated pretty correctly, for the former an arbitrary standard of sufficient strength, not likely to be exceeded, could be fixed.

Notwithstanding that the Commissariat department for India has a well known reputation for the excellence of its arrangements, for supply in the field, there is no such thing or has there ever been in India as a transport service permanently organised on a military footing. In all the campaigns undertaken in India the resources of the Commissariat department, in the way of carriages has always been supplemented by hired carriage, pressed as a rule from the unwilling owners.

This system is still in force, and the march of a regiment in the district camp of a Lieutenant Governor or other civilian, is attended with the drawbacks attendant to such an abuse of power. There is no

reason why the inhabitants of a country should not contribute every man to his ability to the support of the authority that rules the country ; and taxes are imposed on every one directly or indirectly for this purpose, but to seize and carry off owner and cattle, it may be only for one day's march, or for three months, is rather opposed to our spirit of freedom and liberty of the subject. It is true that regulations have been framed to insure the carriage not being taken out of the district that it belongs to, and that the regulated amount of hire is paid before its discharge, but these regulations cannot be carried out in a case of emergency.

Though the carriage supply of the Commissariat is supplemented by hired and pressed carriage, the contract system by which the contractors are bound to furnish so many hackeries, carts or camels, as the case may be, is the real system such as it is, on which the Indian Transport Service rests. A glance will show that it is as a fallacious principle, as it has proved unsatisfactory in working. To introduce a purely civil element with the working of the army, is wrong in itself ; the waste of Government money in subsidizing the contractors is enormous, and the money could be spent with more advantage in other ways. The story of the life of Sir Henry Lawrence, as related by Sir Herbert Edwardes, throws some light on the transport arrangement of the relieving army of Cabul under General Pollock. While all went well, the previous columns made their way to Cabul with the quantities of baggage that Indian armies of the old school were accustomed to travel with, taking the customary comforts of a civilized life through the wilds of the Khyber into the pleasant valley of Cabul. When however the reverse took place and our prestige began to fail in the eyes of our Sikh allies and the natives of India, then came the difficulty of procuring carriage, camel-men were not forthcoming ; those that were at Peshawur with Brigadier Wild's force deserted with their camels if they could, and without them if they could not, and on the arrival of General Pollock, the same difficulty occurred, and the consequence was the reduction of the baggage of the force. Had it not been for the example shown by General Pollock in reducing his baggage to one camel and two mule loads, and the orders he issued on the subject of restricted baggage, the force could not have advanced with the small amount of carriage which the exertions of the Commissariat and of Sir Henry Lawrence managed to procure. Even at this length of time, and with an Indian empire very differently constituted, we can learn the lesson which was not taken to heart then, and has since been almost lost sight of. To trust exclusively almost to one method of carriage, without any organization, is to invite failure at the critical time. No General of the present day would undertake an expedition which was liable to be marred by the fear or caprice of his baggage animal owners, and yet, with the exception of the regimental carriage of the Punjab Force, and the movable column carriage kept up in small numbers at the large stations, and this last exposed to the drawback above mentioned, we have nothing reliable in the way of carriage to trust to.

That there is somewhat of a waste of Government money in the present contract system for the supply of carriage, was shown by a writer on the Commissariat department in the *Calcutta Review* of April 1872. He describes the system on which the contractor for the supply of camels is allowed a rupee a month for every camel he is bound to produce, but as he sublets his contracts, the Government loses, and the contractor makes a large sum annually without any risk on the latter's part, as he is protected by his own contract deeds with others from loss in any shape.

That this arrangement has worked is undoubted; but cheap it cannot be called, nor will it ever be, and if it were in all probability, it would break down. It is only by a lavish expenditure that the Indian Commissariat has managed to make itself a name, and at the same time the fortunes of the contractors; but there has been no systematic arrangement of men and animals in any of the campaigns that have been undertaken. The resources of the country have ever formed the field base, a regular base of operations being unknown in Indian warfare; consequently the distribution of the transport lay between the regimental carriage and the divisional transport. The former has generally been liberal enough, and the latter, with the resources of India in money as well as supplies to back it up, has never broken down in the hands of a Commissariat officer; but it is only owing to the excellence of the latter rather than to "the want of system," that this has been the case.

Having glanced at the existing Indian system of transport and its faults, the means of obviating the last and the method of detailing a suitable organization in lieu of the present one will be considered. It has been shown in the preceding pages that the wants of an army are threefold, in the way of transport, expressed by the terms Regimental, Divisional and Army. And this division must be the basis of the system applicable to India, as it is of the proposed English system.

The Regimental system already exists in a modified form in the Punjab Frontier Force, and a similar arrangement could be made applicable to every regiment in India. The Divisional transport does not exist, but the formation of the Indian Army into divisions would render its introduction a comparatively easy matter, on a principle analogous to the Army Service Corps at home. And lastly, the Army transport, instead of resting, as suggested in the case of the army transport to be raised in England, on the willingness of the people to adopt it, could be enforced out in India even in opposition to the spirit of the population; but there would be no necessity for harsh and unpopular measures in the scheme here proposed.

The resources of India in the way of men and carriage have been hitherto plentiful as a rule, and it only requires a systematic arrangement to prevent any difficulty being felt when the need for carriage arises. The present short service system in India passes a large num-



ber of men through the ranks, who after their first experience of soldiering retire to their village homes, and return to the agricultural pursuits which they left to enlist. It is from these men that the army transport should be raised. Every soldier taking his discharge from the Indian army should be called on to volunteer for the Army Transport, if suitable as regards physical ability and character. It would depend on the Government to decide upon the amount of yearly retaining fee, which would be held out as an inducement to enter the transport service, as also the amount of pay for the time in which the Army Transport is mustered.

These men's names would be on the rolls of the divisional and district staff offices, a copy of the roll being furnished to the civil authorities of the district where the men would reside, so that they could be readily summoned when required. Should the number of volunteers from the discharged soldiers of the army be insufficient, the remaining portion could be enrolled in a similar way from the population, but the advantage of getting men who have already served in the ranks would be great, and strong inducements should be held out to these men to join, as also any men who have already acted as drivers in the Commissariat.

To any man who would undertake to bring with him any baggage animal to the muster when called on, a proportionate increase of pay should be given ; but as no dependence could be placed on any large number of this class of men, a similar arrangement as regards the supply of animals for army transport and as that proposed for home service, could be made. The supply of baggage animals and carts of all kinds would be carefully inspected and registered in the district and divisional civil and military offices ; as in the case of the men, the owners who did not happen to be already enrolled in the Army Transport, would be allowed a yearly retaining fee on the production of their animals, at any stipulated number of musters, beside the regular amount of hire for the time they were absent from their homes.

We have thus detailed a scheme by which both animals and men would be forthcoming when required, but in the event of the quality of the animals being inferior, it would be politic to have Government farms for breeding the necessary stamp of animals, whether camels, mules or cattle. These farms would form a reserve for the Army Transport, but their chief use would be in supplying the necessary cattle for the divisional transport. These two schemes would doubtless be opposed at first, as they would do away with the contract system of transport supply ; and consequently the contractors might be expected to work against them, as their profits would be materially affected ; but in the end there is no doubt that the owners would be glad to deal directly with Government officers rather than with middle-men. It is only on account of the excessive amount of work required from an Indian Commissariat officer, that this system of contractors for the supply of carriage could have arisen. There is only a step

further, and the necessity of a military transport service could be done away with altogether. Let the contract for the supply of transport for the whole Indian army be given to one man, and let him provide for it.

He might be able to do it, but then he would have to work in a manner similar in some degree to that proposed.

The transport resources of the divisions and districts being known, there would only remain to be provided at the head quarters of each division, the carriages and carts required in addition to the native hackeries available for the bullocks when mustered; the mule saddles and gear for the mules, as also Elephant gear and harness for such portions of the country where elephants would be provided. This park or depot would be under the charge of a subordinate officer of the Ordnance Department, who would have every thing ready to be made over to the Transport Department, unless it were thought advisable to organize a permanent transport service, when the officers attached to it would naturally have the charge of their equipment, together with a supply of materials to effect repairs, and a staff of artificers to carry them out, both when in quarters and the field; the latter course is the preferable one, but till the transport service is organized the care of all carriages and harness naturally belongs to the Ordnance Department.

---

#### SECTION IV. THE ARMY TRANSPORT.

The two main considerations which affect Army Transport have already been given; first, the number of men in the army, and secondly, the distance of the base of operations from the field base.

The first head can be sub-divided into the various nature of troops departments of supply of all kinds, hospital trains, the total assembly of which go to make an army. The second presents several cases for consideration, as when first the two bases of operations are in England, secondly when the base of operations is in England and the field base is abroad, thirdly when both the bases are out of England. In all these cases there is a certain amount of definitiveness which even without any exact specification of the theatre of a campaign, enables the distance between the two bases to be fixed, between certain limits of variation. In the first case, for instance, when both the bases are in England, the base of all operations in England is centred between London and the various manufacturing departments, which are located in or near the Royal Arsenal at Woolwich. This is the fountain source of supply, and though there are military store depots at various points, no operation could be conducted for any length of time, if the communication between London and the field base were cut off. The field base may be situated in any part of England and Wales, but it could never be, owing to the network of railway communication that covers England, more than fifty miles away from the railroads. In the north of Scotland, and in the west of Ireland eighty miles might be allowed for this dis-

tance, but neither of these parts of England are vulnerable to any great degree, and therefore as military operations are never likely to be carried on there, the amount of transport for an army operating in England could be fixed for a distance of fifty miles.

The second case, when the base is in England and the field base abroad, is represented by the Crimean campaign, where operations were conducted along a line of coast; in this case the navy transport is substituted for the land transport. The distance of the operations from the shore is so small, that the proposed divisional transport would be sufficient to furnish all the supplies. The third case, when both the bases are abroad, is the one in which a perfect system of transport is necessary. This case is exemplified by the Peninsular campaigns and later by the Abyssinian Expedition. Since the days of the Peninsular war the continental railway systems have become so developed that there are but few portions of Europe where a railroad does not run. The late Franco-German war has taught the lesson of the use of railways in war, and consequently no operations will ever be conducted, even by an invading army, in which dependence will not be placed on a railroad as the means of communication with its base.

Were England ever to enter into a contest with a foreign nation which had its own lines of railroad at its command for massing troops and bringing up supplies, she would be under a great disadvantage, unless the possession of some allies' railroads were secured, to enable her to move with equal facility from the sea-board, which must always be her base of operations. Notwithstanding that the railroad must form the chief means of army transport, a railroad is so vulnerable a means of communication, that it is only safe when well in the rear of the army, or when held by such overpowering number of troops that it cannot be attacked; as when the Germans used the French lines in their advance on Paris, their numbers were so great that nothing that the French could do or did hindered their use; but an English army could never rely on bringing sufficient men into the field on the continent to make use of an enemy's railroad in his own country, at the outset of a campaign. It is impossible to speculate where the theatre of a European war would be with relation to its distance from a secure railroad line of communication, but were provision for transport made for a fixed number of men for a given number of miles, it would be possible for the Commander-in-Chief, or the leading mind who had the planning of the campaign, to know to what lengths he might proceed and arrange the campaign accordingly; the resources of the country if known beforehand could be calculated on as an assistance, and as a reserve for casualties on service, but would not affect the primary consideration of the amount of army transport necessary.

Whatever a country, in which a campaign has to be carried on can furnish, must be taken advantage of, and a proportionate deduction made in the total weights of supplies and stores, horses, wagons and other means of transport, required by the army; but their provision is

immaterial in considering the total weights of stores required to be transported for the use of the army. In the abstract question of supply and transport, it is of no consequence, if for instance 100 wagons are required to carry stores, that it should be detailed beforehand that only ten wagons would be furnished by the transport department, and the remaining ninety requisitioned from the country in which the campaign took place; all that it is necessary to ascertain is, are the 100 wagons actually necessary, and for what purpose are they required? In the following pages the attempt will be made to ascertain the quantities of stores that are usually carried by an army, and, if no regulation or authority is in force on the subject, to detail the probable quantities of any stores that are likely to be required on service.

In preparing a scheme for the English Army Transport, it would, in the absence of any reliable data, be necessary to fix a certain limit of distance, in which a force might be allowed to work, and with the present systems of railroad communication in Europe, this limit might be fixed at three hundred miles of road, which, together with the supposed reliable railway communication of one hundred miles, would represent a distance of about four hundred miles from the sea-board. If this distance were found too small for the exigencies of the campaign, it would be possible to increase it, but this should rather be done by an extension of the railroad if possible, than by adding to the number of the transport men and horses in the field. In a campaign in England the distance, at which an army might be supposed to act in repelling an invasion, would never exceed 50 miles from the nearest railway.

With these limits in view, we will proceed to consider the largest number of men likely to be employed in an army acting either in or out of England. The English army on its war footing may be taken in round numbers at 150,000 men, of which 45,000 are occupied in the garrisons of India, and 10,000 more in the other foreign stations where garrisons are kept.\* This would leave an army of 80,000 to 90,000 men available for an European war, while for home defence we have in addition a force of Militia and Volunteers which, with the standing army, would represent a force of about 350,000 men. The English Army Transport, then, must be capable of supplying 80,000 men at a distance of three hundred miles, and 350,000 men for home service at a distance of fifty miles.

Though the totals are given, they form too high a figure to allow of a satisfactory organization; the army in the field is divided into corps d'armee, and we must in this respect follow the Prussian model,

---

\* The present numbers are numerically :

|                       |     |     |     |     |         |
|-----------------------|-----|-----|-----|-----|---------|
| Regular Army          | ... | ... | ... | ... | 191,892 |
| British Army in India | ... | ... | ... | ... | 62,924  |

---

128,968

Total strength including the above Militia Germany Army Reserve and Volunteers  
530,000.

and attach a satisfactory transport service to each corps d'armee; but herein lies the difficulty; there is nothing laid down as to what the strength of a corps d'armee of the English Army would be. In the Wellington prize essay on the system of Field Manœuvres, there is a detail of a force given, which might be taken at about 21,000 men, and 6,000 horses of the mounted branches. In Hozier's Commissariat equipment, a force is detailed with a total of 15,500 men and about 5,500 horses. The strength of the English Army being about 80,000 to 90,000 men, a corps d'armee might be assumed to be 20,000 men, and in the want of any definite proportion the number of horses of the mounted branches might be taken at 6,000; and as in framing an estimate it is advisable to err on the safe side, we might assume the regimental and divisional transport services to require 2,000 more horses; the strength of an English corps d'armee, for which the Army Transport has to be organized, would be therefore 20,000 men and 8,000 horses.

The distances of 50 and 300 miles represent respectively four, and twenty-five days short marches, long marches not being advisable if feasible for baggage and transport trains. The length of marches depend on so many contingencies of season, climate, and country, that it is better to fix a low standard length in the first instance, which can be increased as circumstances determine, in the actual operations of war, than to calculate in the first instance for a continuous succession of forced marches.

The wants of an Army are ;—

- 1st. Food and Commissariat stores.
- 2nd. Ammunition and Ordnance stores.
- 3rd. Hospital and Medical stores.
- 4th. Reserves of clothing and equipments.
- 5th. Field Post.

Some of the items in this list represent comparative fixed quantities, when the number of men is known, liable to small variations; while others, such as the food, ammunition, and medical stores, require daily renewal; so that we have to consider the total amount of reserves of all kinds to be carried with the army at the field base, and the daily quantities of supplies of all kinds necessary to keep the reserves up to their proper proportion.

The various departments of supply as entered above will now be considered. Food and Commissariat stores.

How many days' food should be collected at the field base? This item must be definitively settled without reference to the resources of the country where the operations are being carried on; these may supplement and lighten the labours of the supply branch, but the trouble, delay and uncertainty of collecting them, will prevent their entering into their calculation of the field base supply. At the base of operations and at

any intermediate depots that might be formed, time and opportunity would be afforded for the purpose, but at the field base neither are forthcoming. The amount of food at the field base must be sufficient to allow of changes in the line of operations, and the consequent changes and shiftings of the intermediate depots and supply stations ; and the interruption of the flow of supplies. To allow time, where for strategical reasons new lines are taken up, three days' supply as in the Prussian Service, might be taken as a minimum for the amount to be carried at the field base, both for home and foreign service. Rations of meat have the advantage of carrying themselves on a march in the shape of droves of cattle, therefore transport has only to be provided for bread in the shape of flour and the means of baking it or its substitute, biscuits, as also for tea, coffee, rice, salt, pepper, sugar and preserved vegetables ; spirits where such an issue is allowed, grain rations for the horses belonging to the army ; firewood for cooking purposes must be procured from the country, as also the forage ration for the horses. The daily ration of bread or flour is a pound of either, and the total weight of the other items including spirits, is about eight ounces per man. The daily grain ration of a horse may be taken at 8lbs. of grain of whatever sort is procurable. Thus the basis of the calculation for estimating the quantity of transport for food, rests upon the above data ;  $1\frac{1}{2}$ lbs. per man and 8lbs. per horse. The Army Transport must be sufficient in numbers to carry, in the case of an army out of England the daily supply of rations for an army of 100,000 men, up to the arbitrary limit of 25 marches, and for the home forces we have an army of 350,000 men, to be supplied at a distance of four marches from the railroad leading from the base of operations.

In actual warfare it would seldom happen, though it was the case in the Abyssinian Expedition, that all the supplies were moved along one road, but as in considering the subject it simplifies the matter to imagine only one line of communication, no reference has been made to more than one line ; practically, however the effect lies the other way, and several lines of communications would simplify the distribution of stores. It would be impossible for any transport service to work continuously along a line or lines of road, without some means of resting occasionally, and repairing damage of all kinds ; this can only be done by having depots at intervals. Too many depots would be inconvenient, in cases of having to shift the line of communication, but one at every fifth march or 60 miles, would materially assist the distribution of stores. In supposing an advance into an enemy's country, the army being prepared to act at the distance of 25 marches from its base, the depots would be established at the 5th, 10th, 15th, 20th and 25th march ; the transport which carried the provisions for the first five days would not go beyond the fifth march or first depot and similarly each five days food transport from 6th to 10th, 11th to the 15th, &c., would not pass its further depot. Thus each stage or transport column would be occupied in carrying the daily supplies of food from the rear towards the front, returning either empty, or employed as it would be certain to be in the transport of the wounded and sick to the rear.

Though twenty-five marches have been arbitrarily assigned as the limit to probable operations in European warfare, there is nothing to prevent the system of five short march stages being increased indefinitely, provided the carriage be forthcoming in the way of animals, men and wagons.

The depots would be formed at the 5th, 10th, 15th, 20th and 25th marches, and would be lettered alphabetically A, B, C, D, E. These depots do not prevent the establishment of other subsidiary posts along the line ; these are most necessary at the regular halting places, so that no delay should occur in supplying the transport and supply service, or the troops following in rear of the army ; but without these main depots, it is impossible to organize any general scheme of supply, as otherwise delay and confusion would arise from the endless stream of vehicles, which would block the communications. Some delay must occur in the movement of baggage and supply columns, but the introduction of a system tends to reduce it. The following is a sketch of what might be done with this object in view.

The Divisional Transport would carry three days rations, and would follow in rear of the Regimental Transport with the army on its first day's march.

The Army Transport would be divided into five columns or regiments, lettered A, B, C, D, E, each working up as far as the Depot which had the same letter, each depot in succession represents the Field Base.

The Army Transport A column would follow the march of the army on the second day, carrying six days' supplies, and reaching the A Depot on the 5th day. The Divisional Transport would refill its empty wagons from the full wagons of the column, and these last wagons would be able to return (as soon as empty) to the base, to bring up fresh supplies. Six days' provisions are allowed to all the supply columns, though they are only intended for supplying five days' food for the army. The extra day's supply includes the rations of the Transport itself, and the supply of the constant passage of troops to and from the Army.

The B column would leave the base on the 3rd day with 6 days' provisions for the B depot, doing 120 miles in 7 days.

The C column would leave the base on the 4th day, reaching its destination C Depot on the 14th day, doing 180 miles in 11 days.

The D column would start on the 5th day and reach D Depot on the 19th day, or 240 miles in 14 days.

The E Column would start on the 6th day, reach the Field Base of the army on the 24th, or 300 miles in 18 days.

By this arrangement the army would arrive at the end of its march with three days' supplies in the Divisional Transport and the means of renewing its supplies by the Transport Columns on the roads. This is shewn as under :

|                                 |     |                                  |
|---------------------------------|-----|----------------------------------|
| 1st day in Divisional Transport | =   | 3 day's supplies.                |
| Received up to 5th day A Column | =   | 5 + 1 Do. The one day's supplies |
| Total                           | ... | 8 to be left at A Depot.         |
| Deduct                          | ... | 5 expended from 1st to 5th.      |
| Balance on 5th                  | ... | 3                                |
| Received up to 10th B Column    | ... | 5 + 1                            |
| Total                           | ... | 8                                |
| Deduct                          | ... | 5 expended 6th to 10th.          |
| Balance on 10th                 | ... | 3                                |
| Received up to 15th C.          | ... | 5 + 1                            |
| Total                           | ... | 8                                |
| Deduct                          | ... | 5 expended from 11th to 15th.    |
|                                 | ... | 3                                |
| Received up to 20th D           | ... | 5 + 1                            |
| Total                           | ... | 8                                |
| Deduct                          | ... | 5 expended from 16th to 20th.    |
|                                 | ... | 3                                |
| Received up to 25th             | ... | 6                                |
| Total                           | ... | 9                                |
| Deduct                          | ... | 5 expended from 28st to 25th.    |
| Balance on 25th                 | ... | 4 days' supplies.                |

The next convoy of 6 days' provisions would reach the E Depot, or Field Base, by the 31st day, and six days' supply would follow regularly afterwards every fifth day, this will be seen clearly from the accompanying table:—

|                                    |     |     |     |    |    |    |    |    |
|------------------------------------|-----|-----|-----|----|----|----|----|----|
| No of column                       | ... | ... | ... | A  | B  | C  | D  | E  |
| Date of leaving base of operations | ... | ... | ... | 2  | 3  | 4  | 5  | 6  |
| " " 1st arrival at its depot       | ... | ... | ... | 5  | 10 | 14 | 19 | 24 |
| " " " return to base or next depot | ... | ... | ... | 8  | 13 | 17 | 22 | 27 |
| " " 2nd arrival at its depot       | ... | ... | ... | 11 | 16 | 20 | 25 | 30 |
| " " " return to base or depot      | ... | ... | ... | 14 | 19 | 23 | 28 | 33 |
| " " 3rd arrival at its depot       | ... | ... | ... | 17 | 22 | 26 | 31 | 36 |
| " " " return to base or depot      | ... | ... | ... | 20 | 25 | 29 | 34 | 39 |
| " " 4th arrival at depot           | ... | ... | ... | 23 | 28 | 32 | 37 | 42 |

Thus the second despatch of the A column leaving the base on the 2nd, would reach A depot on the 11th; B column returns to A depot on the 13th; carries six days' supplies to B depot which it reaches on the 16th; C column reaches its depot on the 20th, leaving B depot on the 17th; D column reaches the C depot on its first return journey on the 22nd, arrives at its depot on the 25th; the stores are taken on by E column on the 27th, reaching E or the field base by the 30th, and then regularly every sixth day—on the 36th 42nd and so on, six days' supply would reach the field base.



The supplies having reached the field base would be distributed by the Divisional Transport; but before considering the duties of the latter, we must provide for the ammunition columns, ordnance parks and field hospital, which form the second division of Army Transport.

The rate of supply of ammunition is not like the food supply a fixed quantity, but it varies with the expenditure on service. To accumulate therefore too large a quantity at the field base would be as great an error as to run short of it when required. The present system laid down is to have the first\* and second reserves of ammunition under the charge of the officer commanding the Artillery, and the third reserve under the Control or Ordnance Department; and this system may be adopted with some modification to suit the proposed system. The first reserve might be called the Regimental Reserve, and attached to the other regimental carriage; this is the more necessary as the rapidity of fire of modern rifles requires that the means for replenishing the stock of small arm ammunition should be close at hand, with regiments. The second reserve might be called the Divisional Reserve. This might be left under the charge of the officer commanding the Royal Artillery of the division, who would issue it under the orders of the General Commanding the Division; the third reserve, would be in the Field Ordnance Park at the Field Base reserve, which would be replenished from the base of operations, and it would be carried by the Army Transport.

The columns for the supply of ammunition must be quite distinct from those of the food supply service; they would be organized in the same way, starting from the base of operations and working forward by means of the depots, as the chain of communication grew longer.

The ammunition columns would be subdivided into gun and small arm ammunition sections. The proportion of rounds per man of small arm ammunition on a campaign has been hitherto fixed, at—In charge of troops and regimental reserve 90 rounds; 1st reserve 40;—2nd reserve 40; 3rd reserve 50; and 780 rounds at the base of operations, and intermediate depots. These numbers would hardly suffice in the present day, so that we might calculate—

|                               |                |
|-------------------------------|----------------|
| With the regiments in pouch   | ... 60 rounds. |
| The Regimental Reserve at     | ... 40 "       |
| The Divisional Reserve at     | ... 80 "       |
| The Field Base Reserve at     | ... 100 "      |
| And at the base of operations | ... 720 "      |

A case of 800 Snider cartridges weigh 90 lbs., so that for an army to take the Field, it will be necessary in the two first reserves to

---

\* In the last autumn manœuvres the first reserves were carried regimentally.

provide carriage at the rate of nearly 23 lbs. a man; as however the 720 rounds per man at the base would only be moved forward in instalments, it would be sufficient to supply carriage for the ammunition columns at the rate of 100 rounds or 11 lbs. per man.

The gun ammunition reserves are nowhere detailed with accuracy. The second line of wagons constitutes the first or the Regimental Reserve, the reserve batteries of gun and small arm ammunition under the officer commanding Royal Artillery, are the second or Divisional Reserve; but the number of rounds per piece in the field base reserved under the charge of the Control or Military Store Officer is not laid down, so that to be able to arrive at a definite conclusion regarding Army Transport, we must settle the amount to be carried by the Field Base Reserve, and then it will be possible to arrange for keeping up this quantity.

The average number of rounds taken in the 2nd Line of wagons varies according to the nature of the battery of Horse and Field Artillery, from 96 and 90 in the 9 and 12 pr. Armstrong Batteries, to 47 for 9 pr. S B and 90 for 24 pr. Howitzer. We may consider therefore the 1st Reserve of gun ammunition to be at 90 rounds per piece. The second reserve is laid down at 60 rounds per piece. And if we have to assign a proportion for the 3rd Reserve, it cannot will be under two hundred rounds per piece in the field. The proportion of guns to men is generally taken at 3 per 1000; so that for a force of 20,000 men, there would be in the field 60 guns. Taking the field reserve proportion at two hundred rounds per gun, it would be necessary to transport 60,000 rounds, and if the weight of each shot were averaged to be 15 lbs. inclusive of its packing, the cartridge and small stores necessary for its use, we should have a total weight of 180,000 lbs; or 9 lbs per man in the field, for gun ammunition in the Field Base reserve; and to keep this up, we must allow for carriage at the rate of 100 rounds per piece, or 90,000 lbs. which would be equal to  $4\frac{1}{2}$  lbs. per man in addition; the total weight of gun and small arm ammunition to be carried therefore by the Army Transport in the Field Base reserves, and on the line of communication, is  $31 + 13\frac{1}{2} = 44\frac{1}{2}$  lbs per man in the field.

No calculation has yet been made for all the various other stores besides ammunition of all kinds, which must necessarily accompany an army in the field and where no tables of equipment are laid down with authority, it becomes difficult to detail the composition of these Parks. The chief element in their constitution is the Siege Train, and though the detail of a Siege Train with rifled guns of various calibres is laid down, it may be safely assumed, that a modern Siege train would be formed of the heaviest calibres that could possibly be moved, and the introduction of Traction Engines has rendered feasible the transport of guns of the present day, which could never have been em-

played in past wars. With the introduction of Traction Engines for this purpose, there is no limit to the weight of shot and shell and stores that can be carried, and as the question of Transport for the Army does not as yet go beyond the employment of animal power, we can lay aside the consideration of the Siege Train Equipment altogether, and turn to that of the other stores that would be found in an Ordnance Park for which carriage has to be provided. The list is a formidable one; it comprises first, stores ready for use; secondly, materials for repairs; thirdly, the means of executing the repairs. The list has no pretensions to accuracy as to numbers, as in preparing a list of stores for the Equipment of an Ordnance Park the authority of Government is necessary.

|                                                  | No.  | Weight<br>of<br>each. | Total<br>Weight<br>Cwt. |
|--------------------------------------------------|------|-----------------------|-------------------------|
| <i>Stores ready for use—</i>                     |      |                       |                         |
| Accountrements ... .. Sets ...                   | 100  | lbs. 2                | 2                       |
| Carriage Field Gun with Guns ... ..              | 10   | Cwt. 35               | 350                     |
| "    Ammunition ... ..                           | 10   | " 40                  | 400                     |
| Carts or Carriage Forge ... ..                   | 2    | " 14                  | 28                      |
| "    Store ... ..                                | 2    | " 12                  | 24                      |
| "    Medical ... ..                              | 2    | " 12                  | 24                      |
| "    Water ... ..                                | 2    | " 8                   | 16                      |
| Wagons, Ambulance ... ..                         | 2    | " 20                  | 40                      |
| "    General Service ... ..                      | 10   | " 20                  | 200                     |
| "    Store ... ..                                | 2    | " 12                  | 24                      |
| "    Pontoon ... ..                              | 2    | " 15?                 | 30                      |
| "    Telegraph ... ..                            | 2    | " 15?                 | 30                      |
| Wheels, Spare ... ..                             | 30   | " 2                   | 60                      |
| Camp Equipage ... ..                             | 30   | lbs. 70               | 20                      |
| Harness and Saddlery ... .. Sets ...             | 20   | Cwt. 2                | 40                      |
| "    Component Parts ... ..                      | ...  | ...                   | 40                      |
| Pawlines, Rope, Blocks and Tackle ... ..         | ...  | ...                   | 30                      |
| Gunpowder ... ..                                 | ...  | ...                   | 20                      |
| Rockets, Fuzes, Light, Balls, &c., ... ..        | ...  | ...                   | 3                       |
| Tools, Intrenching, of all kinds ... ..          | ...  | ...                   | 40                      |
| Horse Shoes and Nails ... .. Sets ...            | 8000 | lbs. 4                | 300                     |
| <i>Materials for repairs—</i>                    |      |                       |                         |
| Half Wroughts for Carriage and Saddles ... ..    | ...  | ...                   | 50                      |
| Axletrees and Pipe Boxes and Brass Naves ... ..  | ...  | ...                   | 30                      |
| Materials for repair of Harness and hides ... .. | ...  | ...                   | 20                      |
| "    "    Tents and Pawlins ... ..               | ...  | ...                   | 60                      |
| Metals, Iron, Steel, Copper, Brass, &c. ... ..   | ...  | ...                   | 100                     |
| Paint, Lacquer, Glue, Paper ... ..               | ...  | ...                   | 20                      |
| Nails, Screws, Bolts, Nuts, Buckles ... ..       | ...  | ...                   | 10                      |
| <i>Means of executing repairs—</i>               |      |                       |                         |
| Artificer's Chests, Wheeler Smiths' ... ..       | ...  | ...                   | 20                      |
| Saddletree Maker, Collar Maker, ... ..           | ...  | ...                   | 10                      |
| Miners, Painters, Bricklayers ... ..             | ...  | ...                   | 10                      |
| Tinsmiths, Armourers, Shoeing Smiths ... ..      | ...  | ...                   | 20                      |
| Portable Forges ... ..                           | ...  | ...                   | 20                      |
| Grindstones ... ..                               | ...  | ...                   | 40                      |
|                                                  |      |                       | 2131                    |

The total weight of the above being thus estimated at 238, 582 lbs. the weight to be carried per man in the Ordnance Park would be 12 lbs., and half this weight might be allowed for keeping up the supply, making a weight of 18 lbs. per man for Ordnance Stores, other than Ammunition and Siege Train.

#### HOSPITAL SERVICE.

The Army Hospital Equipment, as detailed in Army Equipment Hospital Service, is adapted to follow the general division of transport detailed in these pages. In that work we find the Regimental Hospital Equipment, the Reserve Hospital Equipment, and the book to be complete should have the Army Hospital Equipment; but in lieu of the detail itself, a reference only is given to the Medical and Purveyors' Regulations. This want of precision is noticeable all through the work, the instructions being vague, and the detail of stores not being precise enough for any one to specify with exactness the amount of sick that accommodation is provided for; for instance, we learn that on arrival at the port of debarkation or base of operations, many of the heavy chests are to be left there, and in the detail of stores some chests are noted as to be left behind. If then these chests are superfluous, why should they be carried at all? Again, "Arrangements are to be made for store carts and ambulance wagons to accompany the troops." It is to be presumed that these are to be in addition to those entered in the details, but nothing is said as to the number of these carts. Again; one of the medical store carts allotted to regiments is intended for the conveyance of brigade or divisional hospital stores; why should a cart belonging to a regiment be taken from it when on service; or rather, why should it have been allotted to the regiment to be taken away for another purpose.

Without trenching on the duties of the Medical department, as to the exact amount of stores and medicines, we shall be able with the assistance of the tables given in the Hospital Equipment Book, to detail with sufficient accuracy the total amount of weight to be transported for the Hospital Trains of a force, as soon as the number of sick for whom provision is made is decided on.

The six Prussian Army Hospital Trains, both light and heavy, attached to a corps d'armee will each carry 200 men, or 1200 for the corps of 32,000, which gives a proportion of under 4 p. c. In the Peninsular war of 1813 and 1814, the average, as deduced roughly from the accompanying extracts of the morning states, on the dates shewn, give a percentage of close on 5 p. c.

|                  | Infy. Present. | Sick Present. |
|------------------|----------------|---------------|
| 5th Novr. 1813,  | ... 38,958     | 2,164         |
| 27th Jany. 1814, | ... 37,208     | 1,937         |
| 17th Feb. "      | ... 36,934     | 1,864         |
| 22nd March "     | ... 35,673     | 1,232         |
| Total            | ... 148,766    | 7,197         |

The object of the Hospital Trains being to save life and diminish suffering as much as possible, no niggardly consideration ought to place a limit to the extension of the trains, subject to the only controlling element of not having a single useless man, horse or carriage attached to them.

Taking then 4 p. c. as the extent to which in ordinary service, accommodation should be provided by the Divisional Hospital Transport, it may be calculated that 3 p. c. of these would be returned from the Field Hospitals to the hospitals at the depots and at the base. The daily return of empty supply transport wagons from the Field Base Reserve would provide for the passage to the rear of all for this proportion of sick and wounded of these men.

The daily quantity of food alone to be transported for an army of 20,000 men, would be 867 cwt. Dividing this by 30 cwt., the load of a wagon, we have 29 wagons emptied daily at the Field Base. The amount of carriage returning from the last or E depot to the next or D depot, is six times this amount up to every sixth day, so that at the D depot, there would be formed the first General Hospital to receive the sick sent to the rear, till carriage was forthcoming to pass them on to the base. In 20,000 men the proportion of 3 p. c. sick is about 600, and this number could readily be transported in six days by the 174 wagons, allowing only four men to a wagon.

Of course with severe cases the jolting of Transport wagons, even when lined with straw, would be either fatal, or add considerably to the discomfort of the wounded; so that for these cases a proportion of ambulance-wagons should be attached to each depot and to the Field Base Hospital. The proportion of severely and dangerously wounded men to the whole number may be taken at 25 per cent. of the wounded, so that ambulance transport must be provided at each depot, and the field base Hospital for 150 men for an army of 20,000 or 75 per cent. of the army in the field. The present pattern ambulance wagon is calculated to accommodate eight men, therefore for the 150 men above mentioned we should require 25 ambulance wagons at least (as only two men can be carried in a recumbent position,) for the conveyance of men to the rear at each depot and Field Base Hospital. The army not being at one place, but spread over more or less country, the Field Base Reserve Hospital and Depot Hospitals along the line of communication would vary in strength in accordance with the number of troops in their front; but having established the total number requisite for a given force, we shall be able to distribute it in accordance with the disposition of the army.

These ambulance wagons form part of the "Army" Hospital Train Equipment, and to complete the trains, carts for the conveyance of medicine, stores and camp equipage, &c. are necessary.

The reserve equipment at the base of operations for a battalion of Infantry of about 1,000 men, inclusive of one marquee, 36 bedsteads 120.

blankets and 23 beds, and a list of stores but no medicines or medical appliances, weighs 11,412 lbs. The proportion of bedding shewn would accommodate 60 men or 6 p.c.

These stores, &c., have not to be transported beyond the base, but form part of the Army Hospital Transport. But for the supply of the Depot and Base Hospitals we must have a lighter equipment. The regimental equipment as detailed will furnish the weights.

For a battalion of Infantry with a moving force in the field is provided Indian panniers, one ambulance wagon, one medical store cart, containing one hospital marquee and one bell tent and the necessary instruments, medicines, &c., making up a total weight of 5738lbs, affording accommodation for 20 sick. Deducting the ambulance wagon, which weighs 1994lbs. we have a weight of 3743lbs. for 20 sick, or nearly 187lbs. per man for 20,000 men. We have supposed 4 per cent to be accommodated at once in the Field Base, of which 3 per cent. are passed on to the depots. The transport required to the amount of stores therefore to be conveyed to the Field Base Reserve for an Army of 20,000 men would be the  $800 \times 187$ lbs. or 149,600lbs. or  $7\frac{1}{2}$ lbs. per man of the force in the field, for medicine, stores and their conveyance; add to this 25 ambulance wagons weighing each about 2000lbs. and the total becomes  $149,609 \times 50,000$  200,000lbs. or 10lbs. per man for the Hospital Train Transport at the Field Base Reserve—and  $\frac{3}{4}$  of  $7\frac{1}{2}$ lbs.  $\times 2\frac{1}{2}$ lbs. =  $9\frac{1}{8}$  at each Depot Hospital.

#### TREASURE CONVOYS.

The system of requisitions in an enemy's country for supplies, of all kinds, payable by bonds to be indemnified by the losing side, has not as yet been introduced into the English army, and therefore provision has to be made for the carriage of a certain amount of ready money, to pay the troops and make such payments as cannot be done conveniently, in bills on the treasury at the base of operations. The payment of the troops necessitates a large quantity of small coinage, which is bulky to carry and necessitates therefore a regular pre-arranged organization.

This organization will follow the general division that has been assigned to the other branches of the Transport service. The regimental treasure would be carried by regiments. The divisional treasure would be in the charge of the divisional Paymaster, and it would be kept supplied by treasure convoys, which would be worked by the Army Transport Service between the base of operations and the Field Base. The necessity of having a separate organization for this branch of the transport is caused by the necessity of having picked and trustworthy men, and a special kind of wagons for the safer custody of the treasure. The wagons should be fire and lock proof.

The amount of treasure to be with the Field Base Reserve might be taken at seven days' pay for the troops, and to keep this amount up, the troops being paid daily, or as often as possible, the convoys would

follow the system detailed for the food supplies ; that is, the storage of six days' supply at each of the depots, forwarded so as to reach the field base every sixth day ; in fact, the treasure would form a part of the supply convoy.

The weight to be carried may be calculated thus. Taking five shillings to weigh an ounce, and the daily pay of each man in cash to be six pence ; for 20,000 men the weight would be 2,000 ounces or 166 lbs. Troy weight, which is equal to 138lbs. Avoirdupois weight. In addition to this there is the pay of the officers, which would be paid monthly, but which in daily pay might be taken as weighing about 80 lbs. ; so that the provision to be made for the daily amount of pay for the force, would be 218lbs. net, daily in silver ; add for package and copper money 100 lbs. the total becomes 318lbs. which would be carried in a special wagon ; there are no treasure tumbrils in the English service detailed in the list of service carriages, though there are some to be found in India. Six of these tumbrils would be attached to each supply train. For 25 days' pay, for which carriage is provided, the weight would be 7950lbs. or nearly 4lb. per man, not counting the supplies of ready money for purchases made in the field, while the 7 days' supply at the field base would represent a weight of 11lbs. per man.

#### CLOTHING RESERVES.

For Army Equipment Part V, Infantry, a paragraph relating to the reserves of clothing to be taken into the field is useless as an assistance in considering this subject, for there are no general rules laid down from which the proportion of transport allowable to the Clothing Reserves can be detailed ; we are merely informed that the Adjutant General will submit in every case of an expedition, a list of the clothing to be carried in reserve to the Commander-in-Chief, and that the Secretary of State for War will direct the supply.

To enable this important branch of Army Transport to be clearly settled, the actual expenditure of clothing in the last campaigns of the British Army throughout the world—in India, China, America and New Zealand—should be carefully collated if possible, and a percentage struck of the quantity expended with regard to the number of troops in the field. This would form a reliable basis, on which the calculation might be framed. In the absence of any data this proportion can only be fixed arbitrarily.

In a short modern campaign, the war would be over before the actual clothing, and kit, as at present in use would be worn out, with the exception of boots and stockings. Every other item might be calculated to last its proper time of one year, as regards tunic and trousers, and five years for the great coat ; not but what the wear and tear on service would be much greater than in peace time, but still the clothes might be expected to hold together even if threadbare and patched for the time allowed by regulation. The duration of boots is much less, and a pair which might last for six months in peace, could not be calculated

for more than two months in war. Hence in a campaign with 20,000 men in the field, we must be prepared to supply 20,000 pairs of boots every two months, and 20,000 suits every year, or 10,000 pairs of boots and 1,600 suits monthly. In the limit of distance for transport, we have assigned, viz. 25 marches, these numbers would undergo but comparatively little alteration, so that we can take them as they are. A pair of boots weighs 3 lbs. and a suit of clothes, 4lbs., tunic and trousers each weighing 2lbs., so that the total weight for these items would be

|                                        |                            |
|----------------------------------------|----------------------------|
|                                        | $10,000 \times 3 = 30,000$ |
|                                        | $1,600 \times 4 = 6,400$   |
| add for necessaries and under clothing | $1,600 \times 2 = 3,200$   |
| <hr/>                                  |                            |
|                                        | 39,600lbs.                 |

or about 2lbs. per man in the field. A reserve of blankets, both horse and for men, and waterproof covers and sheets, though included in camp equipment, naturally belongs to this division of the army stores.

In the outline of a corps d'armee, as given, the numbers were 20,000 men and 8,000 horses; all these would take the field properly equipped. So that we have only to arrange for replacing the probable losses on service. With no data to work on, as in the case of the clothing, a probable number must be assigned in the first instance. Ten per cent. would not be an excessive proportion to allow for losses.

|                                     |     |     |           |            |
|-------------------------------------|-----|-----|-----------|------------|
| A man's blanket weighs              | ... | ... | 3lbs.     | 12oz.      |
| A horse's blanket weighs            | ... | ... | 7lbs.     | 8 "        |
| A waterproof saddle cover weighs... | ... | ... | 1lbs.     | 12 "       |
| A do. horse cover                   | ... | ... | 1 "       | 12 "       |
| A do. sheet                         | "   | ... | 4 "       | 0 "        |
| 2,000 men's blankets weigh          | ... | ... | 7,500lbs. |            |
| " " waterproof sheets weigh         | ... | ... | 8,000 "   |            |
| 800 horse blankets weigh            | ... | ... | 6,000 "   |            |
| " " covers                          | "   | ... | 7,400 "   |            |
| " saddle covers                     | "   | ... | 7,400 "   |            |
|                                     |     |     |           | <hr/>      |
| Total                               |     |     |           | 24,300lbs. |

or 1·2lbs. for the reserves of blankets, etc., per man in an army of 20,000 men. This, added to the proportion of reserves for clothing, &c. gives a weight of 3·2lbs. per man. This quantity should be kept in the field reserve, and the supply must be kept up from the base to replenish it as it is expended.



The veterinary equipment for the mounted branches on service can be calculated at the rate of 2lbs. per horse for a three months' supply, or, if, as in the imaginary corps d'armee of 20,000 men and 8,000 horses, the proportion of men to horses is definitively fixed, it be desirable to give the weight per man in the field, it would then be 8lbs. per man.

One-fourth the above weights could be taken as the amount necessary to keep the stock up to its proportion, so that the weight for which transport has to be found for the veterinary equipment would be either 2lbs. 8oz. per horse in the field or 1lb. per man.

The same proportion would be applied to the horses of the Army Transport Service, which are not included in the number of horses given. The regimental veterinary equipment, from which the above data is calculated, is given in the Army Equipment Part. 1, Cavalry. This would be included in the Regimental Transport.

Without calling on the Postal Department to furnish statistics of weight transported for every given number of men, any numbers that may be assigned to the receipt and despatch of correspondence must be purely chimerical, and have no value whatever; but it may be enough for the purpose of this paper to assign a fixed weight for the daily correspondence of the army, and so arrive at some idea of what might be required.

For this purpose, we might assign 1lb. weight of correspondence to every department and head quarter with the corps d'armee, and  $\frac{1}{2}$ oz. per man for private correspondence. These data would give a probable total of 55lbs. to the former, and 310lbs. to the latter, total 365lbs. for the light mails; and following the Prussian system we might introduce a parcel post, to be conveyed by the heavy mails; 500lbs. might be the weight allowed for the daily heavy mail, so that we have for the light mail a weight of 365lbs. or  $\cdot 015$ lb. per man and for the heavy mail  $\cdot 025$ lbs. To keep up the despatch of the mails, posts of horses every seven or eight miles would be required, so that in the distance of 300 miles there would be about 40 posts. The amount of weight transported per man would be therefore 6lb. for the light and 1lb. for the heavy mail. The Postal Department would follow the division into army divisional and regimental post offices. The first two would be under the control of the Post Office officials.

For an army of 20,000 men and 8,000 horses, acting at a distance of 25 marches from the base of operations, the weights to be transported as given in the preceding pages would be—

|                                  |                                                   |                    | lbs per<br>man.  | cwt.   |
|----------------------------------|---------------------------------------------------|--------------------|------------------|--------|
| Rations                          | Men at $1\frac{1}{2}$ lbs per day                 | Communications ... | 37 $\frac{1}{2}$ | 6696   |
|                                  | Horses at 8 lbs „ „<br>or $3\frac{1}{2}$ per man. | Do. ...            | 80               | 14285  |
| Ordnance                         | Gun ammunition                                    | Field Base ...     | 9                | 1607   |
|                                  | Small arm ammunition                              | Communications ... | 4 $\frac{1}{2}$  | 804    |
|                                  | tion 12,000 Infantry                              | Field Base ...     | 6·6              | 1179   |
|                                  |                                                   | Communications ... | 6·6              | 1179   |
| Park.                            | Reserve Stores.                                   | Field Base ...     | 12               | 2143   |
|                                  |                                                   | Communications ... | 6                | 1072   |
| Hospital Service                 | ...                                               | Field Base* ...    | 10               | 1785   |
|                                  |                                                   | Communications ... | 40               | 7140   |
| Clothing Reserves                | ...                                               | Field Base ...     | 3·2              | 571    |
|                                  |                                                   | Communications ... | 1·6              | 285    |
| Treasure                         | ...                                               | Field Base ...     | ·11              | 19     |
|                                  |                                                   | Communications ... | ·4               | 71     |
| Veterinary Reserve               | ...                                               | Field Base ...     | ·8               | 142    |
|                                  |                                                   | Communications ... | ·2               | 36     |
| Field Post                       | ...                                               | Communications ... | 1·6              | 285    |
|                                  |                                                   | Total Weight ...   | ...              | 39,301 |
| Weight carried at the Field Base |                                                   | ... ..             | 41·71            | 7,448  |
| „ „ along the communication      |                                                   | ... ..             | 178·4            | 31,855 |

The question of the carriage for these weights has now to be considered, allowing 30 cwt. as the load of a 4-horse wagon, the amount of carriage for the Field Base reserve would be 248, or in round numbers 250 wagons, with 4 horses and 2 drivers each; the total number of men and horses, allowing for dismounted men, non-commissioned officers and spare drivers, also spare riding and draught horses, might be taken at 900 men and 1100 horses.

The weight to be carried along the communications is 31,855 cwt., for which 1062 wagons would be required; this would require a transport force of about 3700 and 4500 horses.

Thus to keep a force of 20,000 men in the field, at a distance of twenty-five marches, requires a total transport service, (not counting the divisional and regimental transport) of 4600 men and 5600 horses, and 1312 wagons.

The men and horses of the transport service require identically the same proportion of transport for their supply, as the rest of the army. With the exception of the proportion of ammunition, and in this case

---

\* The actual weight is 11lbs. per man for small arm ammunition; this in terms of the whole force of 30,000 men becomes 6·6 per man.

the weight allowed for forage must be separately calculated. From 178·4lbs. as above shewn, we can deduct 80lbs. for forage, and 11·1lbs. for ammunition=91·1; leaving a balance of 87·3lbs. per man to be carried. By reducing the extent of hospital accommodation for the transport service, which can be done, as being non-combatants they are not exposed to the casualties of service, this balance could be reduced to 57·3, allowing only 10lbs. per man of the transport for hospital accomodation.

$$\begin{array}{rcl} \text{The forage for the transport horses would weigh} & \frac{5600 \times 200}{112} & = 10,000 \text{ cwt.} \\ \text{The men require carriage for} & \frac{4,600 \times 57.3}{112} & = \frac{2,353}{12,353} \text{ cwt.} \end{array}$$

To transport this weight requires 412 wagons, which may be roughly estimated at one-third the number required for the supply of the troops, so that the number of wagons required for the supply of the transport, with the sum of a descending geometrical series of which the rates is  $\frac{1}{3}$ , the first term being 412 and the last about 2, the total sum of the wagons would be 617, which is rather under one-half the number required for the army.

Thus the total number of wagons required for the Army Transport of a force of 20,000 men and 8,000 horses, actually at a distance of 25 marches from their base, would be—

|                                |     |     |               |
|--------------------------------|-----|-----|---------------|
| For the supply of the Army ... | ... | ... | 1,312 wagons. |
| " " of the Transport ...       | ... | ... | 617 "         |
|                                |     |     | 1,929         |

The number of horses must be therefore about 10,000, and the number of Non-Commissioned Officers, mounted and dismounted men about 7000: the proportion of weight carried per man of the whole force being  $2\frac{2}{3}$  cwt. not including any allowance for rations of hay or straw. If these have to be carried additional transport for 17,000  $\times$  10lbs. the weight of a ration of hay or 1510 cwt. daily would have to be provided, which would raise the total weight to be carried to 4 cwt. per man. This is less however than was carried in the Abyssinian Campaign.

## SECTION V. DIVISIONAL TRANSPORT.

The object of the Divisional Transport has been stated in a general way as the distribution of stores and supplies from the field base to the Army, but this definition, though easy to lay down in writing, would in practice require a system to enable the distribution to be worked effectively. There are other duties connected with the Divisional Transport which require also to be considered. The carriage of the baggage of the Head Quarters and Staff of the Army would naturally, as also that of

the Divisional and Brigade Head Quarters, devolve on the Divisional Transport. Then there is the carriage of the Engineer's Park. It is necessary that this should be sufficiently near the scene of active operations, so that any sudden and large demand for entrenching tools, bridge making stores, &c., should be as near at hand as possible.

In the remarks on Army Transport it has not been possible to avoid trenching on the subject of the Divisional Transport in some cases, so that repetition becomes necessary in considering the whole Divisional Transport.

We have then to consider—

1. The means of carrying three days' supplies of food and Commissariat stores, refilling the supply as expended from the Field Base.
2. The conveyance of the stores in the Engineer Park.
3. The Army Head Quarter Divisional and Brigade Head Quarter baggage.
4. The Divisional Hospital Train.

The second reserve of gun and small ammunition or the Divisional Reserves, are carried in the Reserve batteries, which are equipped for the field by the Royal Artillery, so that there will be no necessity in this paper to arrange for its transport. It is however to be supposed that these Reserve batteries would actually be formed for a campaign; they do not exist in peace time; and it is just possible that a battery which is only on paper could not be readily put together in working order. If these batteries were not put into the field, the numbers of men, horses and wagons detailed for them would be required under another designation, if the reserves even of ammunition were required. The position in the field that this reserve of ammunition would occupy would be somewhat in advance of the Field Base reserve. The Field Base reserve being situated about one march in rear of the army in the field, the Divisional Reserve of ammunition would be somewhat in advance of it, so that there should be less crowding at the Field Base, and that the ammunition should be nearer at hand when required.

#### COMMISSARIAT STORES.

In the plans proposed every article of supply in the way of food for man and beast, has been supposed to be available in the field base reserve. The flour is there to make bread; the cattle are there to be turned into meat; but the bread has to be made and baked, and the cattle to be killed before the distribution of supplies can be effected, and then every thing has to be weighed out for every separate regiment and battery. Of course it is not absolutely necessary that this conversion of the materials into food should be made at the field base reserve; it can be done as well at the camp or bivouac; but there would be a

saving of time if the process were done beforehand, and the food supplied, ready for distribution to the force in the field, either by divisions or brigades ; but in either case the carriage must be forthcoming to convey the rations. For the army transport we have calculated on  $1\frac{1}{2}$  lb. per man which includes bread and dry stores, but for the divisional transport, another pound per man will have to be added, on account of the meat ration, so that the total amount to be carried per man will be  $2\frac{1}{2}$  lbs. and 8lbs. per horse. The rations would be conveyed to the Commissariat depot, which should be centrally situated in the camp, and thence distributed under regimental arrangements as laid down in the Regulations for Encampment. Attached to the Commissariat at the field base reserves would be the field bakeries ; the staff of bakers should be sufficient to manage the ovens, producing enough bread daily for the army. In the Commissariat equipment, the weight of stores detailed for the bakeries, butcheries, and for magazine implements, for a force of 14,600 men is as under—

|                     |     |             |
|---------------------|-----|-------------|
| Magazine implements | ... | 28,433 lbs. |
| Bakeries            | ... | 29,625      |
| Butcheries          | ... | 6,147       |
| Tools               | ... | 15,092      |
|                     |     | <hr/>       |
|                     |     | 79,297      |

which would be at the rate of  $5\frac{1}{2}$  lbs per man, and could be carried in 24 wagons of 30 cwt. The carriage of three days' supplies would for a force of 20,000 men and 8,000 horses require.

$$\begin{array}{l} 20,000 \text{ men at } 7\frac{1}{2} \text{ lbs.} \\ 8,000 \text{ horses at } 24 \text{ lbs.} \end{array} \quad \left. \vphantom{\begin{array}{l} 20,000 \text{ men at } 7\frac{1}{2} \text{ lbs.} \\ 8,000 \text{ horses at } 24 \text{ lbs.} \end{array}} \right\} = 3053 \text{ cwt.} = 100 \text{ wagons.}$$

The horses required for these supply columns are included in the 8,000 here calculated for.

#### STAFF BAGGAGE.

Without defining the quantity of baggage to be allowed in the field to the head quarter staff and the divisional and brigade staff of the army, it might be sufficient to detail a proportion of store carts for this purpose, each cart carrying a load of 10 cwt. and drawn by two horses.

|                                |     |     |   |
|--------------------------------|-----|-----|---|
| Commander-in-Chief             | ... | ... | 3 |
| Military Secretary             | ... | ... | 1 |
| Chief of the Staff             | ... | ... | 1 |
| Adjutant General               | ... | ... | 1 |
| Quarter Master General         | ... | ... | 1 |
| Inspector General of Hospitals | ... | ... | 1 |
| " " Ordnance                   | ... | ... | 1 |
| Commissary General             | ... | ... | 1 |
| Chaplain General               | ... | ... | 1 |
| Aide-de-Camps                  | ... | ... | 1 |
| Head Quarter Mess              | ... | ... | 2 |

---

14 carts.

|                                                                                                                 |     | Corps d'armee. | Division.     | Brigade.      |
|-----------------------------------------------------------------------------------------------------------------|-----|----------------|---------------|---------------|
| General Commanding                                                                                              | ... | 2              | 1             | ...           |
| Brigadier                                                                                                       | ... | ...            | ...           | 1             |
| Assistant Adjutant General                                                                                      | ... | 1              | $\frac{1}{2}$ | ...           |
| Assistant Quarter Master General                                                                                | ... | 1              | $\frac{1}{2}$ | $\frac{1}{2}$ |
| Dy. Inspector General Hospitals                                                                                 | ... | 1              | $\frac{1}{2}$ | $\frac{1}{2}$ |
| Dy. Commissary General                                                                                          | ... | 1              | $\frac{1}{2}$ | $\frac{1}{2}$ |
| Commissary of Ordnance                                                                                          | ... | 1              | ...           | ...           |
| Chaplain                                                                                                        | ... | 1              | 1             | $\frac{1}{2}$ |
| Aide de Camps                                                                                                   | ... | 1              | 1             | $\frac{1}{2}$ |
| Head Quarter Mess                                                                                               | ... | 2              | 2             | 1             |
| Brigade Major                                                                                                   | ... | ...            | ...           | $\frac{1}{2}$ |
|                                                                                                                 |     | <hr/>          | <hr/>         | <hr/>         |
|                                                                                                                 |     | 11             | 7             | 5             |
| 2 Divisions                                                                                                     | ... | <hr/>          | <hr/>         | <hr/>         |
|                                                                                                                 |     | ...            | 14            | ...           |
| 4 Brigades                                                                                                      | ... | ...            | ...           | 20            |
| Total of carts for the carriage of staff officers and staff officers' baggage for a corps d'armee of 20,000 men |     |                |               | 45            |

#### ENGINEER'S PARK.

The Engineer's Park would comprise every article of supply ready for use, that would facilitate the march of the Army, and for which no other provision is made in Regulations ; as under—

1. The field supply of intrenching tools in addition to the quantities carried regimentally.
2. The materials for trestle and spar bridges, for suspension bridges, cordage and tackles.
3. The supply of sand bags, iron gabions for field fortification.
4. Powder for blasting and other purposes.
5. The means for the repair of railroads.
6. The reserve carriages of the Pontoon Train.
7. The reserve carriages for the Telegraph.
8. Forge and store wagons for repairs in the field.

It is obvious that this list, composed of heavy stores, can only be detailed when the nature of the country in which an expedition takes place is known ; for the purposes of this paper it will be sufficient to assign a certain number of wagons for each purpose. We might for a corps d'armee of 20,000 men assign such a number as could be divided equally among the divisions, so that each division should have its Engineer Park properly equipped.

The number of wagons might be laid down as under.

|    |                             |     |     |     |          |        |
|----|-----------------------------|-----|-----|-----|----------|--------|
| 1. | For Intrenching Tools       | ... | ... | ... | 2        | wagons |
| 2. | " Wooden Bridge materials   | ... | ... | ... | 2        | "      |
| 3. | " Rope                      | "   | ... | ... | 2        | "      |
| 4. | " Sand bags                 | ... | ... | ... | 1        | "      |
| 5. | " Powder                    | ... | ... | ... | 1        | "      |
| 6. | " Repairs to Railroads      | ... | ... | ... | 2        | "      |
| 7. | " Reserve of Spare pontoons | ... | ... | ... | 2        | "      |
| 8. | " " Telegraph carriage      | ... | ... | ... | 2        | "      |
| 9. | " Forge and Store Wagons    | ... | ... | ... | 2        | "      |
|    |                             |     |     |     | <hr/>    |        |
|    |                             |     |     |     | Total... | 16 "   |

### THE DIVISIONAL HOSPITAL TRAIN.

As before mentioned, provision has been made for 4 per cent. sick and wounded of the whole force ; but this percentage is only applied for the Army Hospital Establishments. The Divisional Hospital Train being only required for the speedy removal of the wounded off the field of battle to short distances, a smaller percentage might be allowed. Taking the corps d'armee at 20,000 men, and allowing 3 per cent wounded, we would require carriage for 600 men ; this at the rate of 6 men per ambulance wagon, would require 100 wagons for each corps d'armee ; to this would be added about two medical store carts, for the carriage of medical appliances, &c.

### SUMMARY.

The total number of men, horses and wagons required for the divisional transport of a corps d'armee of 20,000 men and 8,000 horses, would therefore be—

|                                           |     | Wagons.   | Carts.      |
|-------------------------------------------|-----|-----------|-------------|
| Carriage of 3 days' supplies              | ... | 100       |             |
| " Commissariat stores including bakeries, |     |           |             |
| &c., ...                                  | ... | 24        |             |
| " Staff Officers' baggage                 | ... | ...       | 45          |
| " Engineer's Park                         | ... | 16        |             |
| " Divisional Hospital Trains              | ... | 100       | 4           |
|                                           |     | <hr/>     |             |
|                                           |     | Total ... | 240      49 |

The number of horses required for these carriages would be  $960 + 90 = 1050$ , or with outriders, horses and spare 1,200, and the number of men would be, mounted and dismounted, about 950. The weight carried being in the proportion of 40lbs. per man, not counting the carts for the staff officers' baggage.

## SECTION VI. REGIMENTAL TRANSPORT.

The third branch of the Transport service, is the Regimental Transport ; its object is to have all the means at hand for keeping up the fighting capability of a regiment in the highest possible state of efficiency. To effect this, carriage must be provided, so that everything should be available when wanted either in the way of stores, ammunition, camp equipage, blankets, kits, regimental hospital arrangements, the means of cooking, and of carrying, and procuring a good supply of drinking water, intrenching tools for defensive operations, such regimental records as are necessary to be taken into the field, the paymasters' chest and books, conveyance of officers' and mess property. The above is a long list of the impedimenta, which must necessarily accompany a regiment into the field; the quantities of every item of which is already determined, with the exception of the means of procuring water, in the various equipment tables of the British Army, both at home and in India. The chief difficulty in the amount of transport requisite is caused by the provision of camp equipage ; were this item omitted, the carriage of the remainder of the list above detailed could be compressed into a comparatively small space, but the addition of camp equipage necessitates increased carriage at the rate of about 6lbs. per man in the Home service, and of about 50 lbs. per man with the present pattern of tent for Indian service.

It has always been the practice of the English Army to carry tents, and therefore it may be presumed that a custom so sanctioned by use is not likely to be soon done away with ; the advantages and disadvantages seem to be nearly balanced ; as the object of an army is to maintain its fighting power, it cannot be denied that the protection of a tent would be of great assistance in effecting thus ; while on the other hand, the mobility of a regiment is affected, as also its strength, by the loss of men in baggage guards, by increasing the amount of baggage. The Prussian army bivouac without them ; but in default, they put up bothies of branches whenever procurable. In the last Looshai expedition tents were discarded, and they might always be left behind if the country in which operations were conducted could furnish the necessary amount of shelter. In the plains of India and in many other parts of the world in tropical climates, tents, capable of resisting the penetrating power of the sun, must of necessity be supplied ; consequently in these countries the increased carriage cannot be avoided. The tents and camp equipage should however be relegated into the class of heavy baggage, along with many other items of the list above given, such as stores, means of cooking, records, treasure chest, officers' and mess' baggage. The remaining items, ammunition, blankets, regimental hospital equipment, water supply, intrenching tools, would form the light baggage, with which a regiment should be prepared to move, leaving its heavy baggage at the base of operations or elsewhere, till circumstances enabled it to be brought into use again. This division of regimental baggage into two portions, heavy and light, all previously laid down in equipment tables, and with the regimental transport for each portion, carefully separated,



would be of great assistance in preventing confusion and doubts as to the meaning and extent of light marching order ; and it will be on this basis that the regimental transport will be considered in detail hereafter.

The present equipment for service comprises a proportion of intrenching tools, blankets for men and horses, picketting gear, tents and butchers' implements, carried in the last Autumn manœuvres in wagons, one of which was attached to each company ; this arrangement though satisfactory in its working, is not sufficiently elastic to meet every condition of service. Instead of one wagon, it would be preferable to have two carts per company, one for the essential or light, the other for the advisable, or heavy equipment of each company. The number of horses would be the same.

The regimental equipment of stores for Field Service, as laid down, is not in all cases susceptible of equal divisions among the companies of a regiment, the surplus after assigning the proportion for each company or troop would belong to the head quarters of the regiment. The following is the list of stores allowed for a regiment of Infantry or Cavalry in the Field as laid down in Army Circular, 1st May 1872 ; altered to meet the proposed light and heavy equipment.

| NAMES OF STORES.               | Total No. per Regiment. | Weight of each.  | No. and weight per Company. |                   | No. per Head Quarters. | Weight per Head Quarters. |
|--------------------------------|-------------------------|------------------|-----------------------------|-------------------|------------------------|---------------------------|
|                                |                         |                  |                             |                   |                        |                           |
|                                |                         | lbs.             |                             | lbs.              |                        | lbs.                      |
| Axes, Felling ...              | 16                      | 5 $\frac{3}{4}$  | 1                           | 5 $\frac{3}{4}$   | 6                      | 34 $\frac{1}{2}$          |
| „ Hand ...                     | 66                      | 2                | 6                           | 12                | 6                      | 12                        |
| „ Pick ...                     | 60                      | 8 $\frac{1}{2}$  | 5                           | 42 $\frac{1}{2}$  | 10                     | 85                        |
| Bars, Crow ...                 | 2                       | 10               | ...                         | ...               | 2                      | 20                        |
| „ „ ...                        | 2                       | 22               | ...                         | ...               | 2                      | 44                        |
| Blankets, Grey, field service. | 886                     | 4                | 88                          | 352               | 6                      | 24                        |
| Hooks, Bill ...                | 66                      | 13 $\frac{1}{4}$ | 6                           | 10 $\frac{1}{2}$  | 6                      | 10 $\frac{1}{2}$          |
| Kettles, Tureens ...           | 176                     | 3 $\frac{3}{8}$  | 17                          | 51 $\frac{3}{8}$  | 6                      | 20 $\frac{1}{4}$          |
| Shovels ...                    | 100                     | 4 $\frac{1}{4}$  | 9                           | 38 $\frac{1}{4}$  | 10                     | 45                        |
| Spades ...                     | 10                      | 5 $\frac{1}{2}$  | 1                           | 5 $\frac{1}{2}$   | 1                      | 5 $\frac{1}{2}$           |
| Total ..                       | ...                     | ...              | ...                         | 523 $\frac{7}{8}$ | ...                    | 300 $\frac{3}{4}$         |

*Heavy Equipment.*

|                          |     |                 |     |                  |     |                   |
|--------------------------|-----|-----------------|-----|------------------|-----|-------------------|
| Butchers' Implements ... | ... | ...             | ... | ...              | ... | 102 $\frac{1}{4}$ |
| Sheets, Waterproof ...   | 664 | 4               | 64  | 256              | 24  | 96                |
| Tents, Circular ...      | 83  | 70              | 8   | 560              | 3   | 210               |
| Buckets, Leather ...     | 83  | 2 $\frac{1}{2}$ | 8   | 20 $\frac{1}{2}$ | 3   | 7 $\frac{1}{2}$   |
|                          | ... | ...             | ... | 836              | ... | 313 $\frac{1}{2}$ |

There would be in addition to the above a small quantity of picketing gear for horses belonging to the staff of the regiment, and the horses in use with the carts ; these have not been entered, as the weights for an infantry regiment would be comparatively little.

The allowance for officers in the field is calculated at 40lbs. in light marching order ; if there were three officers per company, this would add 120lbs. to be carried in the Light Company cart. The remainder of the officers' baggage at the rate of 50lbs. per officer would be carried in the Heavy Company Cart. This allowance of 90lbs. per officer but little above the absolute requirements for service, as under.

Thus the load of each company light baggage cart would be over 650lbs. including picketing gear, and the load, though not a heavy one, would be sufficiently bulky to fill an ordinary sized cart.

In the Heavy Company Baggage Cart would be carried

|                                 |     |     |     |     |     |
|---------------------------------|-----|-----|-----|-----|-----|
| Camp Equipage                   | ... | ... | ... | ... | 836 |
| Officers' Baggage               | ... | ... | ... | ... | 150 |
| Spare Arm Chest                 | ... | ... | ... | ... | 90  |
| Shoe-makers' and Tailors' Chest | ... | ... | ... | ... | 30  |
| Company Records                 | ... | ... | ... | ... | 30  |

1,136lbs

*Detail of Officers' Baggage in the Field.*

|                              |     |        |                                                                                                                                                                                                                                                                         |
|------------------------------|-----|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 Undress Suit               | ... | 7lbs.  | One complete suit being in wear, the total provision of clothing would be three suits, to provide a full dress equipment would in some cases be unnecessary, as in a mountain expedition against savages, but it will not be difficult to find something to replace it. |
| 1 Full Dress                 | ... | 10 "   |                                                                                                                                                                                                                                                                         |
| 2 Pair Boots                 | ... | 5 "    |                                                                                                                                                                                                                                                                         |
| 2 Changes of Linen           | ... | 3 "    |                                                                                                                                                                                                                                                                         |
| 4 Towels                     | ... | 2 "    |                                                                                                                                                                                                                                                                         |
| 1 Dressing Case and Soap     | ... | 3 "    |                                                                                                                                                                                                                                                                         |
| 1 Waterproof Sheet           | ... | 8 "    |                                                                                                                                                                                                                                                                         |
| 2 Blankets                   | ... | 14 "   |                                                                                                                                                                                                                                                                         |
| 1 Great Coat                 | ... | 7 "    |                                                                                                                                                                                                                                                                         |
| 1 Writing Case               | ... | 2 "    |                                                                                                                                                                                                                                                                         |
| 2 Sketch Book                | ... | 2 "    |                                                                                                                                                                                                                                                                         |
| Ammunition                   | ... | 1 "    |                                                                                                                                                                                                                                                                         |
| Cooking Utensils             | ... | 15 "   |                                                                                                                                                                                                                                                                         |
| 2 Light Cases                | ... | 6 "    |                                                                                                                                                                                                                                                                         |
| 1 Lantern and Candles or oil | ... | 5 "    |                                                                                                                                                                                                                                                                         |
|                              |     | 90lbs. |                                                                                                                                                                                                                                                                         |

The Carriage for the Regimental Head Quarters, would comprise.

For Commdg. Officer, Adj. Office and Regtl. Records ... 1 Cart.

" Qr. Mrs. and Regtl. Stores and Pay Master and  
Regtl. Chest... ... 3 "

For Regimental Reserve of Ammunition ... 2 carts.

„ Medical Officers, Medicines, Hospital Stores and Tents,

Purveyors, Apothecary ... 1 „

„ Ambulance ... 1 „

There being no necessity for the division of the regimental head quarter baggage into heavy and light, except under extraordinary circumstances, no attempt has been made to divide them; with the three carts as above shewn, one could always be taken for any light equipment, and the others would remain for the rest of the stores. There would probably be allowed two carts for the officers' mess and stores. The total number of carts therefore would be 20 company carts + 8 two horse carts and 3 four horse-wagons, ammunition and ambulance = 31 vehicles and 68 horses, being at the rate of 31lbs. per man, the regiment being 1,000 strong, and the carts supposed to carry 1,000 lbs.—this proportion includes officers' baggage.

*Detail of Stores carried in Quarter Masters' Carts.*

|                              |         |                          |            |
|------------------------------|---------|--------------------------|------------|
| 2 Bell Tents                 | ... 145 | 1 Chest Boots, 100 pairs | ... 250    |
| Intrenching Tools & Blankets | 300     | 2 Do., Clothing 50 suits | ... 300    |
| Waterproof Sheets            | ... 64  | 1 Leather Hide           | ... 100    |
| Quarter Master's Baggage     | ... 90  | 1 Tin Rangoon Oil        | ... 100    |
| Pay Master's                 | ... 90  | 1 „ Sweet „              | ... 50     |
| 2 Clerks                     | ... 40  | 1 Chest Locks, &c.       | ... 100    |
| Reserve Blankets             | ... 100 | 1 Pay Master's Chest     | ... 200    |
| „ Camp Equipment             | ... 200 |                          |            |
| „ Picketing Gear             | ... 50  |                          | lbs. 1,100 |
|                              | 979     |                          |            |
| Pay Master's Books           | ... 50  | 1 Armourer's forge       | ... 394    |
| Quarter Master's do.         | ... 50  | Camp Equipage, Guards    | ... 220    |
|                              |         | Camp Colours             | ... 50     |
|                              | 1,079   |                          | 864        |

REGIMENTAL TRANSPORT, CAVALRY.

The organization of a regiment of Cavalry in the British Service has always been of such an undecided character, that it is difficult to know how to calculate the amount of carriage requisite for it. The number of men and horses are perpetually being changed. Hitherto it has generally from motives of economy been considered advisable to reduce the number of horses to a minimum, so that only two-thirds of a Cavalry regiment can be mounted at a time. The evil result of this system is beginning to be felt, now that the numbers of men and horses are more equalized, as the scarcity of horse flesh is becoming evident. The latest regulation prescribes the number of men at 455, and the number of horses at 436; and the following calculation is based on these numbers, in the regulation for Camp Equipage:—

*Light Equipment.*

| Names of Stores.            | Weight of each. | Amount allowed to Rept. | No. | Weight per Squadron. | No. | Weight for Hd. Qrs. |
|-----------------------------|-----------------|-------------------------|-----|----------------------|-----|---------------------|
| Axes, Felling ...           | 5½              | 5                       | 1   | 5½                   | 1   | 5½                  |
| " Hand ...                  | 2               | 29                      | 6   | 12                   | 5   | 10½                 |
| " Pick ...                  | 8½              | 13                      | 3   | 25½                  | 1   | 8½                  |
| Bags, Nose ...              | ...             | ...                     | ... | ...                  | ... | 20                  |
| Bars, Crow 4 inch ...       | 10              | 2                       | ... | ...                  | ... | 44                  |
| " 5½ ...                    | 22              | 2                       | ... | ...                  | ... | 84                  |
| Blankets, Grey, F. S. ...   | 4               | 455                     | 112 | 448                  | 7   | 50                  |
| " Horse ...                 | 6½              | 436                     | 106 | 662½                 | 8   | 17½                 |
| Covers, Horse, Vallises ... | 1½              | 226                     | 54  | 94                   | 10  | 10½                 |
| Hooks, Bill ...             | 1½              | 110                     | 26  | 46½                  | 6   | 4½                  |
| " Reaping ...               | ...             | 55                      | 12  | 7½                   | 7   | 30½                 |
| Kettles, Torrens' ...       | 3½              | 89                      | 20  | 67½                  | 9   | ...                 |
| Lanterns ...                | 2½              | 4                       | 1   | 2½                   | ... | ...                 |
| Nets, Forage, per ...       | 2½              | 455                     | 112 | 252                  | 7   | 15½                 |
| Picketing Implements.       | ...             | ...                     | ... | ...                  | ... | ...                 |
| Cords, Forage.              | ...             | ...                     | ... | ...                  | ... | ...                 |
| Pegs, Wood.                 | ...             | ...                     | ... | ...                  | ... | ...                 |
| Shackles, Leather.          | ...             | ...                     | ... | ...                  | ... | ...                 |
| Post, Picket, 2½ ft. ...    | 5               | 306                     | 72  | 360                  | 18  | 90                  |
| Rope, Picket, 16yds. ...    | 16              | 51                      | 12  | 192                  | 3   | 48                  |
| Mauls, Picket ...           | 8½              | 12                      | 1   | 8½                   | 4   | 36                  |
| Sacks, Corn.                | ...             | ...                     | ... | ...                  | ... | ...                 |
| Shovels ...                 | 4½              | 13                      | 2   | 8½                   | 5   | 21½                 |
| Spades ...                  | 6½              | 13                      | 2   | 15½                  | 5   | 27½                 |
| Harness, Pad ...            | ½               | 436                     | 106 | 106                  | 12  | 12                  |
| Surcingle, " ...            | ½               | ...                     | ... | ...                  | ... | ...                 |
| Total...                    | ...             | ...                     | ... | 2510                 | ... | 535½                |
| Butcher's Implements ...    | 102½            | 1                       | ... | ...                  | 1   | 102½                |
| Tents, Circular ...         | 70              | 55                      | 12  | 840                  | 7   | 490                 |
| Buckets, Leather ...        | 2½              | 150                     | 24  | 54                   | 14  | 31                  |
| Sheets, Waterproof ...      | 4               | 440                     | 96  | 384                  | 56  | 224                 |
| Total...                    | ...             | ...                     | ... | 1278                 | ... | 847                 |

The items of which the numbers are not given are carried by the horses.

The weights given above shew that for the light equipment, two carts per squadron or 1 per troop are required, and 1 for the squadron camp equipage. The troop officers' baggage would be added to the

loads above. The carriage for the regimental head quarters would comprise :—

|                                                                     |           |                                                                             |
|---------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------|
| For Commanding Officer ... ..                                       | 1 cart.   |                                                                             |
| Messes, Adjutant and Office.                                        |           |                                                                             |
| For Quarter Master and Regimental Stores and Pay Master and chests, | 2 „       |                                                                             |
| Veterinary Surgeon and Veterinary Equipment ... ..                  | 1 „       |                                                                             |
| Medical Officers' Hospital Stores ...                               | 1 „ ...   | Hospital Equipment.                                                         |
| Ditto do. do. ... ..                                                | ... ..    | Ditto ditto.                                                                |
| Ambulance ... ..                                                    | 1 „       |                                                                             |
| Store Cart ... ..                                                   | 1 „ ...   | In lieu of panniers for Saddlers ; Saddle tree-makers and Armourers' Forge. |
| Forge Wagon ... ..                                                  | 2 „ ..    | Cavalry Equipment.                                                          |
| Water Carts... ..                                                   | 2 „ ...   | Sanctioned for standing camps. No authority..                               |
| Ammunition ... ..                                                   | 1 „       |                                                                             |
| 4 Squadrons' Light Baggage ...                                      | 8 „       |                                                                             |
| Ditto. Camp Equipage ...                                            | 4 „       |                                                                             |
|                                                                     | 24 Carts. | 50 Horses.                                                                  |

For the conveyance of the baggage of the drivers no extra transport is required ; their blankets and horse blankets being carried on the off horse of the pair. Two extra tents would be required however, which would be carried in one of the Quarter Master's carts. For the officers' mess and stores two carts might be allowed ; this would increase the number of regimental carts to 26 and 54 horses. Taking as before the load of a cart at 1,000 lbs. and the strength of the regiment at 600 men, the weight carried would be at the rate of 43½lbs. per man.

The baggage of the Artillery Horse and Field Brigade is provided for under regimental arrangements, with the exception of a few pack and bat horses for the carriage of the officers' luggage, and for a very small quantity of other stores. The numbers are so slight that the total given will cover any increase on this account.

Engineer, Pontoon and Telegraph Trains—no information of the strength of these trains is available, the second part of the Engineer equipment, which should contain it, not having been published.

## SECTION VII. DETAILS OF THE ORGANIZATION OF THE TRANSPORT CORPS.

The preceding pages have shewn the object and extent for which a Transport Service is required. The weights to be transported have been

given, founded as far as possible on the existing regulations of the service, and an arbitrary limit to the extent to which operations might be conducted, has been taken as a guide in ascertaining the probable requirements of a Transport Service. The method of procuring men and horses at will for the transport has been suggested, and though it may appear that the liberty of the subject has been somewhat infringed on in the proposal, to requisition horses when required for service from their owners, yet it must be borne in mind that there is no alternative plan, to get rid of this difficulty ; except by the state purchasing at once the horses it requires.

The expense of this course is prohibitory ; no useless expenditure of public money could be made on such an unremunerative object in time of peace, and therefore some other plan must be adopted. The question may be stated thus ; a Transport Service on an organized footing is necessary, and its cost is to be a minimum. There seems to be no other way of getting out of this difficulty than by calling on the individuals of the country to assist the State, and if the majority of the citizens are satisfied, that by undertaking the provision of transport there would be an immediate gain to themselves, as well as a prospective advantage to the State, it would be in their power, by the introduction and passing of laws to this effect, to compel the minority to follow in their steps.

In the absence of any exciting cause for patriotism, it would be, perhaps, difficult to induce the majority to undertake the problematical duty of providing horses when called on. If so, the spirit of the nation being against it, there will be nothing to be done, but to await the disasters that will arise when our army takes the field, either at home or abroad with a hastily collected Transport Service, which if it does not break down, will be more expensive, and hence more burdensome on the taxpayers, than the proposed system. It is to be hoped, however, that the nation, being alive to the necessities of the army, will be prepared to assist the State in the matter of transport, in which case it will be possible to put an English Army into the field with as much ease, and celerity, as the Germans are able to do with their organization.

There is another point to be borne in mind, and that is, the scarcity of horses in England in the present day. With no studs to fall back on, and a dearth of horses, it would be impossible for Government to collect the stamp of cattle required, at a short notice. The experience of the Abyssinian expedition shewed the uselessness of unbroken and young animals, and though in this case the Transport Service was chiefly confined to pack loads, yet the argument holds good for draught animals, which must be in their prime, and accustomed to heavy draught to be of any use, so that even if the number of fresh horses were available for purchase when required, a very large percentage must be allowed for casualties, and this of course means increased expense.

All the calculations have been made as yet on the assumption of wheeled carriage transport, this being in every way the best for those countries where it can be employed. However, in mountainous countries, or in sandy plains, where mule or camel carriage must per force be employed, the transport must be arranged for accordingly; but the solution of the problem is not altered. A certain quantity of stores has to be transported; this requires either a certain quantity of draught horses and carriages, pack mules with saddles, or camels, with their pads, or a combination of all three kinds; with the increase in numbers of animals caused by the adoption of pack loads, a corresponding increase in the personnel of the columns must be made, with more supervision, for one wheeled carriage with four horses and two drivers, carrying 30 cwt. is equal to 15 mules, with 15 drivers, or 7 camels and three drivers, or 60 porters or coolies. The number of animals in an Abyssinian transport division was 2,000; applying this to the proportions above given, we would have a division of wagons numbering 100, a division of camels at 1,000, and a division of coolies at 8,000 men, all of which would carry the same quantities of stores.

The great difficulty in providing for the transport of an English Army on a settled basis, is caused by the perpetual alterations of the strength of the unit of the service, the battalion of the Infantry. There is no standard rule, which can fix the establishment of a regiment in either the times of peace or of war. Hence the impossibility of assigning definitively to the numbers of the transport, except on the basis proposed of allowing a certain weight per man for each of the three kinds of transport. A regiment of Infantry varies from 600 to 1,000 men or even more, according as it is on its peace or war footing, and therefore the numbers of animals must vary also; all calculations should, however, be based on the war strength, as the object of a Transport Service is to enable the regiment to take the field; in peace manœuvres the additional transport should not be called out, but the system should be such as to enable a Commanding Officer to obtain the additional regimental transport he requires without delay.

The same argument holds good with regard to divisional and army transport. Each should be based on the full war strength of an army corps, but this itself is an unknown quantity. Accepting the English system as it is at present, we find the army both at home and abroad, collected in divisions and military districts in variable numbers, under the command of General Officers or Brigadiers. This system is further complicated by the continual reliefs or interchange of regiments from one district to another. Under the proposed system, each regiment when moved would take its regimental transport with it, based on the number of men in the regiment. The divisional transport in time of peace would not be moved from its own division or district.

A regiment moved from one division to another without being relieved, would as regards its divisional transport be equipped by the transport officers of the division, it was located at, and its army trans-

port would be provided in the same manner. If the resources of the division or district could not stand the strain, then the additional carriage required for it could be procured from a neighbouring division. If the transport of an army be available in the country for a certain number of men, it is immaterial in some measure, if in its distribution it does not quite coincide with the distribution of the troops. If the carriage for 1,000 men is forthcoming within a reasonable period when required, it does not matter, provided it can be looked after, that it is fifty miles off from the point where it would be wanted. All that is required is, that the General Officer Commanding a division should know in what time he can collect his Transport. In the calculations given under the different Transport heads the amounts were, per man—

|                                |         |     |                |          |
|--------------------------------|---------|-----|----------------|----------|
| Regimental Transport, Infantry | ...     | ... | ...            | 31 lbs.  |
|                                | Cavalry | ... | ...            | 43½ lbs. |
| Divisional                     | Do.     | ... | ...            | 40 lbs.  |
| Army                           | Do.     | {   | Field Base     | 34 lbs.  |
|                                |         | {   | Communications | 224 lbs. |

This last includes the supplies for 25 days, so that we can calculate the amount to be carried at 9 lbs. per man daily.

The question of forage has been omitted altogether in the calculations, as the case in which forage in the shape of compressed hay has to be carried, is exceptional; nearly every country will provide some sort of forage that can be utilized; if however it has to be taken into consideration, a special branch of the supply and transport service should be devoted to it as before mentioned. The numbers above given are calculated for a corps d'armee composed exclusively of English soldiers—but they would be equally applicable to a force composed either wholly of native troops, or of both English and native soldiers combined. If anything the native soldier requires more carriage for his rations than the Englishman, as his ration is 2 lbs. of flour and about 4 oz. of other food, while the latter's ration has been taken at 1½lbs. of bread, &c. and 1lb. of meat, for which except in the divisional transport no carriage is required. In other respects the proportion of weight would be the same.

If the amount of carriage available be insufficient to provide transport for an army on the above scale, a reduction in the weights must be made. The heavy portion of the regimental transport would first be discarded, then the divisional transport would be reduced to only the carriage of the three days' supplies, and in the Army Transport the carriage of the ordnance stores, and reserves of clothing, would be postponed till it were actually necessary to forward some portion of it, but with these reductions the army could not be considered to be properly equipped.

The number of men necessary for the Transport Service of a corps d'armee would as previously given be



|                          |           |            |
|--------------------------|-----------|------------|
| Army Transport           | ...       | 7,000 men. |
| Divisional "             | ...       | 950 "      |
| Regimental :—            |           |            |
| 12,000 Infantry          | ...       | 408 men    |
| 2,400 Cavalry            | ...       | 162 "      |
| 2,700 Artillery          | ...       | 100 "      |
| 700 Engineers            | ...       | 70 "       |
| 400 Supply Companies     | ...       | 40 "       |
| 400 Army Hospital Corps  | ...       | 40 "       |
| 200 Military Police      | ...       | 20 "       |
| 50 Veterinary Department | ...       | 5 "        |
| 405 Non Combatants       |           |            |
| <hr/> 19,255             | <hr/> 845 | 845 "      |
| <hr/> 20,000 men         |           | <hr/> 8795 |

The men required for the Divisional Regimental Transport of a force would therefore amount to  $950 + 845 = 1795$ , but as no allowance has been made for casualties in calculating this number, it would require 2,000 men to keep this part of the transport efficient. These 2,000 men could be divided into two regiments, each 1,000 strong; one would be specially detailed for regimental service. As many men as were required in time of peace for garrison and regimental duty would be enrolled, the remainder of the men would be on leave till required.

The 7,000 men required for the army transport would be also divided into regiments of 1,000 men, one regiment would be assigned to carriage of the field base reserves, while one regiment would be told off to each depot as before mentioned, under the description of the working of the supply of the army, this would provide for six regiments, the seventh would be at the base of operations, and available to meet casualties. The detail of each regiment would be—

|                      |                |                                                                                                        |
|----------------------|----------------|--------------------------------------------------------------------------------------------------------|
| Officers             | ... 82         | { 1 Lieut. Colonel, 1 Staff Officer, 4 Majors, 4 Capts., 4 Subns., 4 Asst. Surgeons, 1 Vety. Surgeons. |
| Non-Commnd. Officers | ... 50         | { 1 Sergt. Major, 1 Qr. Mr. Sergt., 48 Sergts.                                                         |
| Drivers              | ... 600        | Including 8 Trumpeters.                                                                                |
| Dismounted men       | ... 300        | { For loading vehicles, guards and protection of convoys.                                              |
| Artificers           | ... 28         | { 4 Farrier Sergts., 8 Shoeing Smiths, 8 Collar Makers, 8 Wheelers.                                    |
| Horses               | ... 1200       | All draught horses.                                                                                    |
| Wagons               | ... 280 or 560 | 2 horse Carts.                                                                                         |

It would be divided into four troops.

As soon therefore as a campaign was decided on, it would be possible to mobilize the Army Transport on the basis here given, one regi-

ment to each depot, or the convoy of supplies for five days, march. If the campaign were only to require carriage for ten days, three regiments only would be called out, it however the line of communications exceed three hundred miles, it would be advisable to make use of temporary lines of railroad rather than add more regiments of the transport service, even if the men and horses were forthcoming.

The application of this system of transport to India presents no very great difficulties ; the principle is the same, for every 30,000 men in the army two regiments of regimental and divisional carriage would be organized, while the personnel and materiel of seven other regiments would be carefully noted in the records that would be kept in the Civil and Military Staff Offices of each Division of the Army.

Thus in a Division, in which there were 5000 soldiers serving, there would be found the Regimental and Divisional Troops of the Transport Regiment, while the carriage and army pensioners or discharged soldiers in the district would be formed into the number of Army Transport Troops that it would furnish. The numbers of the troops would not necessarily correspond with the totals as given for the English Transport Service. When once the exact weight allowed per soldier is known, it is not difficult to estimate the carriage that is wanted.

The light regimental carriage in India should be composed, if possible, of mules. The quick pace of a mule enables it to keep up readily with the march of a column. The heavy regimental carriage would require camels or elephants, according to the nature of the country or bullock hackeries. The army transport could be carried on with pack bullocks and bullock hackeries. The siege train would require elephants or traction engines according to the country, and draught bullocks.

The experience gained in the Abyssinian expedition as quoted, would shew the number of animals spare to replace casualties, and the proportion of drivers to animals, so that when the strength of the force in India is given, and the weights allowed for each kind of carriage, the chief difference as regards the weights for the English Army, would be in the heavy regimental baggage, where the camp equipage proportion would be heavier, otherwise the proportions of weight for each kind of transport would be the same as for the English Army, and the system of working the army transport from the base of operations by successive five march stages or depots would also be introduced. If after a careful census of each part of India, it were found that the local resources were not sufficient to equip the various regiments, the balance would have to be either supplied by the Government studs, or the weights must be reduced to the lowest ebb. Another difference to be noted in the Indian transport, would be the substitution of doolies and bearers for ambulances. The employment of coolies or porters would be one that required special consideration, with regard to each campaign.

The unemployed officers of the Indian Army have a large field for

employment in organizing and equipping the various transport regiments that might be formed. The head quarters of each of the transport regiments should be allotted, as far as possible, to the various divisions and districts into which the army is divided, so that they would be brought under the immediate superintendence of the officers commanding; but it is not actually necessary that the men and cattle not called out should reside in the limits of these commands, as long as it was known where they were to be found when required, and that they could be readily assembled.

### SECTION VIII. THE MARCH OF BAGGAGE COLUMNS.

The question of Baggage and Transport has been so little considered up to within the last two years, when the introduction of autumnal manœuvres has in a measure brought the subject into notice, that no detailed existing orders on the subject are available for quotation. On looking back to the Peninsular War we find that the organized march of the baggage of the army was one of the points to which the Duke of Wellington directed his particular attention, the result being communicated, to the army in a General Order. This order is so concise and so easily adaptable to the present systems, that it is given *in extenso*, though it may be advisable to modify some of its terms, which might not perhaps be quite suitable in the present day.

G. O. dated 17th June 1813. Quinconces.

2. In the defiles through which the army is to march it is very desirable that great attention be paid to the march of the baggage, the hour at which it is to move off, and the order in which it is formed.

3. When more than one division of Infantry or Brigade of Cavalry march upon the same road from the same camp, it is desirable that the baggage of each should follow it, and this must be the practice unless otherwise ordered. Where the country is open, two or more divisions of infantry or brigades or cavalry moving from the same camp, are to march half an hour after each other, when the country is close, they are to march one hour after each other.

4. The baggage to be formed as follows :

1st. Oxen for the days provision.

2nd. Wheel carriages drawn by horses or mules.

3rd. „ „ with iron axletrees drawn by bullocks.

4th. Mules with ammunition.

5th. The baggage of the Staff of the Division or Brigade.

6th. Camp Kettle or tent mules, and the baggage of the officers

of the regiments, in the order by regiments, in which the regiment stands in the column.

7th. The commercial stores upon mules.

8th. All bullock carts upon wooden axletrees and droves of oxen, excepting those for the days supply of each division or brigade, are to follow the whole column which will move from the same camp.

5. Officers to take care that the baggage is ready to start at the hour appointed for the march of the division.

The seventh paragraph of the above order enjoins the necessity of an uniform pace at the head of a column, and that the rear of the column should not accelerate its pace to make good distances lost in passing difficulties. The column should rather be halted to enable to distance to be recovered, if not adjusted, at the next subsequent difficulty.

It would be more satisfactory to be able to explain the loads carried in the wheeled vehicles, entered as 2nd and 3rd on the list of the baggage column, but there is no record to shew why they were placed at the head of the column, or what they carried. The Camp Kettle or tent mules were the company mules, originally detailed to carry the camp kettles, but subsequently allotted to carry three tents per company, the camp kettles being made of a lighter pattern and carried by the men alternately. The order of the march of baggage columns in the Peninsular war in the absence of any real data to go on in the two items above given, may be assumed as under—

1st. Oxen for the days provisions.

2nd. Reserve Artillery.

3rd. Ordnance and Engineer's Park.

4th. Reserve of Small Arm Ammunition.

5th. Staff Officer's baggage.

6th. Regimental baggage.

7th. Commissariat stores.

8th Do. and droves of oxen for future supply.

In the Peninsular war there were no rations of bread. Biscuits were issued in lieu, generally three days' supply at a time, and the officers had to inspect the quantities in the possession of the men to see that they did not eat up the three days' supply at once; this will account for no mention of other than meat rations at the head of the column.

The order of march of the baggage columns is naturally dependent on the necessity for the use of the baggage on arrival in camp or

quarters, consequently the oxen for the day's ration takes the lead, as the issue of rations is one of the first duties to be performed on arrival at the end of march.

This meat ration would in the present day be accompanied by the bread ration, and this necessitates a field battery column, and if other rations such as coffee, tea, spirits are to be issued, these must be carried at the head of the baggage column. The staff officers and regimental baggage, other than the regimental reserve of ammunition would follow next, then the four trains of hospital, engineer, ordnance and commissariat stores followed by the droves of oxen. This would be generally the order in which the divisional and regimental transport moved, the formation of the convoys or columns of the army transport, might be as detailed in the Handbook for Field Service, the convoys of ammunition are habitually placed at the head of a line of march, next come the provisions, and finally the effects and clothing, (by effects is probably meant materiel.)

In the Peninsular War the orders were for the baggage to move at one side of the road leaving the other clear, for which purpose men of the Royal Staff Corps were detailed to each column: in the handbook for field services, it is stated, that convoys should occupy the breadth of the road when possible, as it is easy to form single column when necessary. Both methods have their advantages, but the preference seems to rest with the single column of route; if for no other reason, than that it was adopted by the Duke of Wellington.

It has further the advantage, that the line of communication with the men is not blocked up, and secondly that there would be less interruption and delay in crossing obstacles, the drawback against it is of course the lengthening of the column and the difficulty of protecting it.

---

#### CONCLUSION.

To complete the consideration of the whole subject of transport, it might be desirable to touch on the subjects connected with it, such as the comparative merits of the various transport animals, their equipment; the carriages used in the service and Traction Engines.

It would, however, unnecessarily lengthen this paper to write on subjects, which are so generally known, and with regard to the Traction Engines, though the experience of their use in the Franco-German War was very favorable, yet from a variety of circumstances, their introduction into India of late has not met with the same amount of success, and it would therefore be advisable to wait till the development of the use of these engines which will assuredly take place, enables us to learn with precision their exact capabilities, and what dependence can be placed on their use.

The subject of transport is so large and so intimately associated

with the whole of the organization of our army, that it is difficult for a single pen to do justice to it. It is hoped that the remarks made in this paper may have their share in contributing to the establishment of a transport system, which will be suitable to the wants of the English Army in every part of the world.

---

**Note.**—As this paper has been prepared for the "Prize Medal" Competition, the author's name is reserved for the present.—EDITOR.

## X.

## CAVALRY AT THE CAMP,

1872-73.

ON joining the Camp of Exercise, 1872-73, I found the want of memoranda of the Camp of the previous year; and as I believe a few remarks of our doings may be of service in future Camps, I publish my own experiences, and offer a suggestion or two which my comrades may accept for what they are worth.

## CAMPS.

On first joining the camp, I would advise all commanding officers to set to work and drain the camps of their regiments. Those who saw the utter discomfort of the undrained camps at Shumshabad, and contrasted them with the drained ones, require no arguments to prove the utility of my suggestion. Not only at camps of exercise, but in all standing camps, drainage should be at once taken in hand. The plan I found answer was as follows:—

Each drain should be square, 1 foot wide and 1 foot deep.

Four long main drains should be cut the whole depth of the camp—one on either flank of the camp, and one on either hand of the centre street; then one along the front, and one along the rear. Another drain should be cut from the lowest spot of these main drains, to carry the water clear of the camp.

Next, smaller drains should be cut from flank to flank of each wing:—

- (a.) In rear of the horse lines.
- (b.) In rear of native officers' line.
- (c.) In front of the British officers' tents.

These drains should not cut across the centre street, but communicate with the main drains on its flank. There remains only the troop drains, and the work is done.

These are drains cut in rear of the horses' heels and in front of the heel-rope pegs, the entire length of the troop; they communicate with the main drain in the front and the drain in rear of the horse lines. The earth dug out of these drains should be thrown on the horse stalls, making a slope from head to heel.

Some of these drains were cut in rear of the heel-rope pegs, but it did not answer so well as in front of them. Horses are usually taken to their stalls along the rear of the picketing pegs, and the drain, if there, gets filled in and destroyed.

A smaller drain, some four inches deep and a foot broad should be dug the whole length of the troop in front of the head-ropes, the earth being thrown in the centre, making a raised path for men to pass between the horse lines.

This simple drainage can be easily carried out in two days, and the comfort of it is very great.

I noticed how much better off the Native Cavalry were than the British from watering horses by hand at their pickets. The constant coming and going of horses to water in the English regiments trod their camps into a perfect sea of slush ; the Native camps escaped this.

In the official pamphlet on castrametation, published by the Quartermaster General, no position has been allotted for men's ponies and mules : a post is laid down for public carriage and bazars, but none for the regimental baggage ponies. Some regiments kept their ponies in the horse-lines, heel to heel with the horses, others between and in rear of the rows of tents.

It is necessary in standing camps that all tents should be struck at least once a week if the weather is fine. The ground they covered should be laid quite bare, and well aired ; the tents themselves should be turned inside out, and spread out in the sun. The airing should commence when the dew is off the ground, and cease before it commences to fall again. The officer of the day should report that the camp and the drains are perfectly clear of all litter.

### DRESS.

Orders regarding dress varied a good deal in different camps. One thing, however, is worth knowing, *viz.*, that full dress is never worn.

At the Commander-in-Chief's levees, at the Lieutenant-Governor's durbar and dinners, &c., full dress was ignored ; all officers going to Camps of Exercise will do well to leave it behind them.

In the 1st Division camp no one was allowed outside his tent except in uniform, and as this may be the case again, and as the opportunities of wearing plain clothes are at the best few, I would recommend their being left in cantonments.

I cannot imagine anything more requiring reform than the fighting dress of our army, British and Native. In both cases the principal faults I noticed were the wonderful distinctness of the colours. In the British Cavalry, and also in the Artillery, the black dress with the white helmet made as perfect a target as an enemy could wish to shoot at. The tips or ornaments to the pouch-belts could be seen at so great a distance, that I fear being accused of exaggeration if I state what I noticed. Every little plate of metal is a capital heliograph, which might be of use for signalling, but is none as at present worn.



Cavalry must be conspicuous under any circumstances, but a grey blouse and tan belts without ornaments would render them as little as possible. It seems out of place, when speaking of dress, to mention horses, but grey horses when mixed with other colours are most conspicuous. If they must be used (and in India I fear they must) they should be used in a body. A grey squadron is not very conspicuous, but grey horses scattered here and there make the whole of a regiment so. Many of the Native Cavalry regiment sensibly wore khakee or poshteens. Those who did not were as conspicuous as the English Cavalry, excepting as to their white head-dresses.

The ornamented belts of all were as bad as could be. I must not omit to raise my voice against the utter absurdity of the dress of the British officers of Native Cavalry, our own regiment excepted. Looking down the line of the Cavalry division, there appeared here and there Officers dressed in as completely different a manner as their men as possible. Officers of the Russian or Austrian Imperial Guards would not have been more complete contrasts; every one of these was a target, and those who know the value of a British officer in a native regiment will appreciate the magnitude of this great defect.

Officers and men should all dress alike.

### DRILL AND MANŒUVRE.

In speaking of drill, I would wish to draw a distinction between it and manœuvring. It is the fashion now-a-days to find fault with a brigade or regimental Commander if he "boxes the compass," but I think this is senseless. Parades should be distinctly divided into drill and manœuvre, the object of the first being, of course, to qualify for the second. On drill days movements should be performed simply for the sake of the movements themselves, and without any reference to surroundings, the object being simply to perfect all ranks in the movement being performed. In manœuvring parades, some plan should be supposed, or, better still, announced, and every movement performed with a view to carrying out the plan ordered. Speaking, then, simply of drill, I think on the whole it was brought very near perfection. There was little to be desired, and during the Camp I saw no blunder that would have in any way compromised a regiment during a manœuvre. The Frontier Regiments at first were working under great disadvantages with the rest of the Force. Broken up as they ordinarily are, and *never* having had the advantage of brigading, it was astonishing to find them working so well. At the commencement of the Camp they were, of course, very unsteady; but, catching the tone from their neighbours, they very soon settled down, and ultimately held their own with the best of the Force.

The greatest fault I noticed at drill was talking in the ranks. The contrast between the English and Native regiments was most marked,—the British were silent as the grave, the Native at times quite conversational. This remark applies even more to the manœuvring

than the drill. I don't think Officers can make a worse mistake than shouting out to correct this, to avoid that, and to do the other during a drill movement. Brigadiers would do well to let commanding officers do their work by themselves, and commanding officers should put like trust in their squadron leaders. The talking in the ranks I condemn was not only in the ranks, but I have heard chattering and bally-ragging going on among all grades, from commanding officer to sower.

If a slight fault occurs, leave it alone; it will rectify itself. If anything absolutely requiring correction occurs, the squadron leader should trot up to the offender, and order the correction in a low tone of voice.

Not one word should be heard on parade, except the drill-book word of command.

I believe nothing delays a movement so much as the commanding officer calling out "Now, sir, be quick;" and the noise at times made to obtain silence is greater than that complained of. The above, on the whole, was, I think the very worst fault that came under my observation at the Camp.

At both drill and manœuvre supports were invariably too close to the first line. The drill-book lays down the distance plainly enough, and since the publication of the last drill-book events seem too demand a greater distance than ever between first line and supports. When the first line charges, the second, originally at 400 yards' distance, should walk, so that at the moment of contact with the enemy there should be about 600 yards at least between the first and second lines. I more than once saw the support within 80 yards, and on one occasion I heard umpires object to a support as being out of action when it was certainly not 500 yards from the line it was supporting.

A little study of the drill-book, which is after all, the best work on Cavalry Drill I know, would be useful in many quarters. Moreover, common-sense would tell one that an unbroken line of cavalry, even at the distance of half a mile, is sufficient support to the charging line—at least an enemy venturesome enough to disregard it would do so to his cost.

During manœuvres I think there were too many "suppositions." Why have any? Set two forces down, and let them do what they like.

I would warn all officers, more especially commanding officers going to a Camp of Exercise for the first time, of the extreme rapidity with which a cavalry action culminates. Troops moving in presence of each other, a mile apart, will almost in the twinkling of an eye have met, halted, and dismounted, and the merits of the case have come under the discussion of the umpires whose proceedings, I am sorry to say, will not be so rapid. In mimic war, a commanding officer is under a disadvantage he would not be on actual service. Supposing, for instance, he is sent with his regiment to outflank an enemy's brigade, and he gets on the flank but at half a mile from it; meantime, his own force and the

enemy charge each other face to face : at the camp, the halt and dismount sounds, and the umpires say "that corps is out of the fight"; whereas, on actual service, he would be in the very best position he could possibly be. Little tricks of this sort all must be prepared for.

I would also caution all, more especially on first joining the Camp, when charging an opposing line, to sound the halt freely when within 200 yards, or even more of it. On this occasion, all commanding officers' trumpeters should sound the bugle, and all other trumpeters should take up the call on the trumpet, and *continue sounding till the line halts*. After a time men get more accustomed to the excitement, but at the beginning the danger of a clash is great, and can't be too much guarded against. I would advise that scouts should *always* be out during all manœuvres. Never mind if there is a regiment of your own brigade on your flank, send a couple of scouts to watch beyond them. In all advances let the scouts be well a head of the corps, to keep it out of impracticable ground, to look for ambuscades, &c.; and should your regiment be hidden from its neighbours, watch them with your scouts on all occasions. If another corps is with yours and reports everything all right, still keep your own men out; they are *your own special private messengers*, and if they do their work properly, you *cannot* go wrong. I propose further on to speak fully of the scouting system as established in my own regiment during the Camp, and will only remark here that scouts should *always* be out and on the alert.

### SKIRMISHING.

I confess that I joined the Camp with the very poorest opinion of cavalry skirmishers. I came away firmly persuaded that they are altogether and utterly useless—a weakness to the side employing them.

I have watched them engaged, and I have imagined all sorts of positions in which they can be employed, and I am positive that they can never be of the smallest use. I would here explain that by skirmishing I mean the employment of cavalry at extended order, mounted and using fire-arms. In this formation they are useless under any circumstances, and I should be very glad to see the drill struck out of the drill-book. The accepted uses of skirmishers are—

- 1.—To watch the enemy.
- 2.—To check his skirmishers or individuals.
- 3.—To conceal your own movements.

To the first, I say scouts are infinitely preferable to skirmishers.

To the second, a troop or a strong patrol does the work much better.

To the third, skirmishers conceal nothing.

A brigade of the enemy might advance through skirmishers, paying

no attention to them at all, and a troop could cut to pieces a squadron of skirmishers with no risk to itself.

The fighting formation for cavalry mounted is the line, and its weapon cold steel. Skirmishing is most fatiguing to the horse. It targets the men, and it fritters away a force, which properly used is most valuable.

I have watched skirmishers at the Camp working to perfection according to the drill-book,—watched them closely, and thought *cui bono*?

I have seen skirmishers who themselves saw the whole formation of the opposing force, not one of whom conveyed what he knew to his own main body. They imagined their duty was to fight, not to give news; they expended an immense amount of ammunition and tired their horses, and that was all.

Have any of my readers ever tried to fire a carbine off a horse out skirmishing? I take for granted many have, but probably blank ammunition. Put, however, a bullet in the carbine, and see how near the mark you aim at you can place it. I can't conceive a much safer position than one in front of a line of cavalry skirmishers. They *never* hit the mark. Even target practice mounted is a farce, and under every favourable circumstance the target requires little or no white-wash. In the excitement of action what would be the state of the case?

One of the most distinguished officers at the Camp of Exercise told me that before the battle of Goojerat the British and Sikh cavalry skirmished against each other for two days, and that not a man was hit on either side, and so it will be to the end of the chapter.

### FIGHTING ON FOOT.

I hope what I have said above will not be taken as an advocating the abolition of fire-arms. On the contrary, I would use them very much more freely than they are used, but in a very different way. Every regiment not armed with lances should, in my opinion, be employed more as mounted riflemen than any other way; but under no circumstances, excepting to give an alarm, should a trooper be allowed to fire mounted. Fighting on foot, I think, will prove to be cavalry's strongest point; the rapidity they can gallop to a position and retire from it, give them an immense advantage infantry can never have. When dismounted they are equal to a similar number of infantry under any circumstances, and in most, having first choice of ground, would be able to cope with far more than their own numbers, and might hold a favourable position till relieved by their own infantry, when one minute's hard galloping would take them out of range of musketry. I was very sorry to say that no fighting on foot was attempted at the Camp.

## EXTENDED ORDER.

In condemning skirmishing, I would not condemn movements at extended order. This was more than once tried at the Camp with success, in advancing or retiring over ground under heavy fire, and, when practicable, this formation should always be adopted.

## LANCERS.

The only objection that I know against a lance is that the lancer is not available for service on foot; he must be content with his pistol, which is sufficient to give an alarm, or blow a man's brains out at arm's length. I would take carbines from them altogether.

He has the queen of weapons for close contact, and must be content with it. Its superiority was abundantly proved at the Shumshabad games, and I congratulate the British soldiers, especially in their dexterous handling of it. I never saw better lance play than that of our gallant comrades of the 4th Hussars and 5th Lancers.

## ADVANCED, REAR GUARDS, &amp;c.

Ordinarily, when advance or rear guards or side patrols were ordered out, there was considerable delay and not dash enough in the advance. To prevent this I would mention the system adopted in my own regiment; it was found to work very well, and I saw no better one that I can recommend.

Every troop *invariably* went on parade told off as an advanced guard. Our guard (and I take it all regiments have the same) was this:—

First of all 2 sowars (scouts), then 1 lance duffadar and 3 sowars, then a duffadar and 7 sowars, then the remainder of the troop under an officer. These were separated from each other at distances according to the nature of the ground, half a mile being the extreme distance between any two parties. On either flank of the advanced scouts, at a maximum interval of half a mile, two more pairs of scouts are detached. These kept a bright look-out, and also maintained communication with the scouts of the flank patrol. If these parties have to be told off when the guard is ordered out, much delay must occur, and probably confusion also. To obviate this our telling off was as follows:—

*The Squadron Guide.* Commandant of the duffadar's party;

*His coverer.* Commandant of the lance duffadar's party;

On their inward flank, 1 file of scouts;

Next to them  $1\frac{1}{2}$  file,—lance duffadar's party;

Next to them  $3\frac{1}{2}$  files,—lance duffadar's party;

Then in the rear rank, on the inward flank of the troop guides, coverers were four scouts.

We *always* paraded like this, and these parties were always proved before the regiment fell in.

On the word, then,—say “Right troop 1st squadron force advanced guard”—the Officer Commanding that troop gave the word. “Gallop—March.” When he had reached the required distance from the main body, he gave the word,—“Officer’s party, Walk,” the remainder continued at the gallop, and the four scouts of his rear rank also; one pair of these went half right of the still advancing body, the other half left, halting of their own accord, when they were in their places abreast of the advanced scouts.

Of the still advancing body, the duffadar and lance duffadar fell out, and when the duffadar’s party was the required distance from the officer’s, he, in like manner, “walked,” and so the lance duffadar; the two advanced scouts still going on and walking when they had reached their situations. The formation of a side patrol was exactly similar, care being taken to send a left troop if the patrol was to the left, and a right troop if to the right; otherwise the tellings off would be upset. When a flank or side patrol is sent out, if the column is on the move, the word should be “Fours right” (or left) “half left” (or right); if they move out at right angles to the column’s line of march, they will find themselves, when they front, considerably in rear of their proper position, and in echelon instead of line.

Should flankers alone be required, one pair of scouts from each squadron or every other squadron will be quite sufficient.

In writing these hints, I am writing chiefly in hopes of benefiting my own branch of the Service; but if our British comrades honour me by reading my Pamphlet, they will understand that duffadar and lance duffadar correspond to Sergeant and Corporal. By working as I have here advised, it will be seen that the men nearest the enemy are all scouts,—an advantage which will I hope, be clearer when I have said my say regarding those useful men.

## SCOUTS.

As I believe ours was the only regiment that had a regularly organized system of scouts at the Camp, and as it was found to work very well, I describe it, as others may wish to adopt it or improve on it; it is no innovation. The drill-book refers to scouts, but it is not often used in regiments as far as my own experience goes.

There should be in each troop *at least* the following scouts :—2 duffadars, 2 lance duffadars, and 10 sowars. Of these 1 duffadar, and 1 lance duffadar should be on parade, the squadron guide and coverer; and 6 sowars should be placed as shown in treating of Advance Guards. The 4 scouts we worked in the rear rank would be better placed in the

serre-file rank, as when detached (and they nearly always would be in action) their absence weakens the squadron at the centre, the very place where it most requires strength; but until a small increase to the serre-file rank is sanctioned, I see nothing for it but to place them as I say. Should any more of the scouts be present on parade, they should fall in as ordinary troopers.

Every scout should be a light, active, intelligent, cool man; a good rider, able to read and write; he should be also specially instructed in his duties.

Scouts should always be employed in pairs, so that on making any discovery, one keeps his eye on the danger, the other rides back and reports it.

Above all things, it is necessary that scouts should be mounted on the fastest horses in the troop, as they frequently have not only to ride up to the enemy's vedettes, but even pass through them, trusting to their horse's speed to get back again, and also to evade hostile patrols.

They must examine every inch of ground their corps will pass over; and should a village, wood, or piece of difficult ground come in their way, which is too large for them, they should get help from the officer's party of the advance guard. The officer commanding it will most probably see their need and despatch a party without being asked for one, and so save the hard-worked horses of the scouts. Should it so happen that a scout should, by any unfortunate chance, leave an undiscovered danger in his rear, he should fire at once as an alarm, but this can very rarely happen, if ever.

Scouts should never be employed as vedettes; but to patrol beyond the vedettes. They should be spared every duty, except scouting, as much as possible.

They should endeavour to see the enemy without being seen, and to hear without being heard.

If pursued they should bolt, but bolt systematically, and return to the enemy as soon as pursuit ceases. It is important, when they make a discovery of any party of the enemy, that they should ascertain, if possible, whether they themselves have been seen; they should notice every inch of ground they pass over, which will be of assistance in retreating.

Should they notice a party of the enemy, they should be careful to reconnoitre the ground well, if they think their own side may cut them off; as they may be there as a bait to draw their opponents into action on disadvantageous terms.

They should, if possible, ascertain to a man the strength of a small party; they should count guns, squadrons, companies, &c., of large ones,

and should bear in mind that incorrect news is worse, very often, than none at all.

In a general action, scouts should be out as far as they can go, and should watch both friend and foe.

If it is found necessary to halt an advance guard or side patrol as a picket, the scouts then occupying the place of vedettes should be relieved at once by the duffadar's party. They will then take up the duty of patrolling or scouting towards the enemy. One pair going off at once, the remainder being placed by the duffadar within the line of vedettes in some village or other convenient spot. Their only duty, as part of the picket, should be to scout.

They should never, while employed as scouts, be drawn into a fight if avoidable.

There are hundreds of duties and ruses a scout must be up to, but as he is a specially selected man, his motherwit will show him what they are. He will generally find that when dangerously near the enemy he will serve his own side best by taking care of himself.

If captured he will, of course, lie like a tooth-drawer.

The work on both men and horses is very severe, and it may be found necessary to change the latter.

A scout will often find it safer to gallop through the enemy than away from them.

Officers should be freely used as scouts.

### PATROLS.

I prefer scouts to patrols for getting intelligence. Patrols are generally of some little strength, and it is impossible to select the men and horses composing them at a moment's notice; besides, a smart officer with two good scouts is as strong a reconnoitring patrol as is required. Larger parties are more easily seen, and if pursued, most probably some of them will be captured.

I would therefore not use patrols as scouts, but I would have fighting patrols to take the place of skirmishers as now used, detaching supports for them if needed.

A troop formed up as a patrol is more than a match for a squadron of skirmishers.

Fighting patrols would of course be of any strength, and could be used beyond the vedettes if needed.

### RECONNOISSANCES.

Reconnoissances were frequent at the Camp, and well performed I think. I know of no better guide for a reconnoissance than A. G. Circular No. 150 G, 4th November 1864, and would advise the study of it.



## PICKETS.

I am sorry we had so little picket duty at the camp; in fact, we had none. True we marched out some fine morning or evening, placed our pickets, supports, or vedettes and patrols (scouts), and then marched back again. In the fights, too, we had pickets out, but that was hardly picket duty. On service, pickets may easily occupy the same post for a week at a time, the men pitching their tents and picketing their horses, and, of course, getting their meals at the picket. With native troops, especially the getting meals for the men, in something like military order, is a difficulty. This was never once coped with. Instead of the morning's parade for picket duty, I should have liked to have seen a brigade go on duty for two or three days, the horses being picketed and the men being fed by some system which should be uniform for all. I believe the object in parading, as we did, was to avoid the bitter cold of the nights; but with tents and clothed horses this would not have signified.

I have no intention of writing a work on cavalry drill, and take it for granted that all know the duties of pickets. I will merely mention the system we used at the Camp. From the pickets we used one and sometimes two look-out posts, which had the vedettes in view of course. Scouts were freely, and very wisely, used well away in front of the vedettes. The scouts not scouting were placed as near the vedettes as convenient, and inside of them of course. If there was nothing to report to the picket, they made no report. The rule was adopted that no news meant good news, and the scouts' horses were thus saved a long trip from the line of vedettes to the picket and back. By the system described it will be seen that the advanced men from the picket were a long way from the main body; as a rule, about half a mile was the distance of all parties from those immediately in front or in rear of them. Scouts, however, went to any distance they chose in front of the vedettes, so that from thence to the supposed main body would often be as much as five miles. It will be noticed how very easily an advance guard is converted into a picket; in fact, it has nothing to do but halt. The advanced scouts become the vedettes, the lance duffadar's party the look-out post. The duffadar's party moves up to the vedettes (relieving at once the scouts who are not to be posted as vedettes), and places itself in some convenient spot. The officer's party becomes the picket. Two things I should have liked to have seen abolished in connection with pickets—on the enemy's advancing, a picket, according to established custom, retired skirmishing, thus weakening itself to the greatest extent possible. On the real advance being ascertained, the whole picket, with the exception of the scouts, should form up and form a fighting patrol of strength. Scouts should advance through the enemy if possible, and ascertain the strength of supports, &c. If unable to do that, they should use their own judgment, and make themselves as useful as possible.

The second mistake we made on picket duty has been made by

every European army from time immemorial. Why a cavalry man should receive as gospel the rule that a vedette should never dismount, I can't imagine. I have seen vedettes sitting for hours with a clear view of miles all about them, tiring their unfortunate horses most cruelly and unnecessarily. If a vedette is posted in a position close on the enemy, or where a rush would capture him, he should remain mounted, but these posts are not, as a rule, given to cavalry. Whenever a vedette can safely dismount, he should *always* do so. Any one who needlessly puts a dead weight of from 14 to 19 stone on the back of a horse he wishes to get hard work out of, commits a grave military error, and wants common sense. There should be one system for the picketing of horses on picket duty, and for feeding the men.

### HORSE APPOINTMENTS.

Most of the regiments in Camp carried picketing gear on all occasions and a feed for the horse, but I noticed that few carried a blanket for the horse's loins when dismounted, and fewer still a forage net or bag. In our own regiment we found the blanket and a few seers of grass, a great comfort to the horses. The men fed them by hand, so that nothing was wasted in the event of the mount sounding while feeding.

I am not sure that a breastplate is of any use, and am sure a crupper is of none, and that the Bengal Cavalry saddle for officers is an utter abomination.

### NIGHT GUARDS.

One very important part of soldier's duty was almost unnoticed at the Camp. I refer to the guards, more especially the night guards. Much confusion must necessarily arise from the cavalry and infantry guard duties not being the same. Some regiments have taken for granted that, as the latest edition of the Infantry Manual is a more recent publication than the latest Cavalry Regulations, they ought to adopt it; but there is no order on the subject, and some regiments use one, some the other; it would be a very simple matter to make both alike. I think it would have been a good plan to have regularly inspected the night guards, and seen that all were alike and all according to order. I heard some curiosities going on in the way of challenging and receiving rounds. I noticed that the infantry had some of them stuck to the old guard drill; I suppose to counterpoise the cavalry guards adopting the new before ordered to.

### TRUMPET AND BUGLE SOUNDS.

I think it a pity that, as far as possible, all three arms should not have the same call for one order. Such as "Halt," "March," "Fire," "Cease firing," &c.

An instance occurred which will illustrate the inconvenience of the separate calls. In one of the cavalry engagements, skirmishers were out letting off fire-arms and tiring their horses. The Commander-in-Chief

rode up ; just then a native cavalry trumpeter sounded perfectly correct "Cease firing." "What call was that?" asked the Commander-in-Chief. Nobody appearing to know, a handsome, light and wiry Staff Officer, formerly in the infantry, rode up to the officer commanding the skirmishers to ask, and was told, of course, "Cease firing." The report was duly made to the Chief, who said "Is that the same call as used by the English regiments?" "No, my Lord," was the answer, and His Excellency rode off, I conclude, under the idea, that two regiments in the same brigade disagreed as to their trumpet sounds. The Staff Officer was wrong. He, I suppose, expected the cavalry and artillery "Cease firing" to be the same as the infantry, and I don't see any reason they should not be.

### MAPS.

We were supplied with the best Field Maps I have ever seen ; they were printed on cloth, and were easily crammed into the pocket. They were named in consequence "Moral pocket handkerchiefs." It would have been a great thing if these had been printed in Persian for native officers and scouts ; and all native officers, at least, should be made to pass an examination in their use.

### CONCLUSION.

Perhaps a cavalry man ought not to pass an opinion on his own arm I think, nevertheless, we did our work well. True, some people wondered we did not keep up the communication between infantry brigades fighting in hills and ravines,—infantry officers especially seemed to expect this of us. I did not myself see a single instance of a surprise when cavalry was working, which is after all the test of their efficiency as news bringers. In both the great operations at the Camp, it so happened that the infantry were employed in hills and ravines impracticable for cavalry, and the cavalry were therefore, as a rule, opposed to each other, each side having artillery. This could not well be avoided ; it would have been perhaps more instructive had all three arms worked more together.

Some found fault, too, that the extreme right did not know what the left was doing, and they ought to keep up communication—but why ? Both were in communication with the General, and he knew what they were doing well enough.

One great difficulty I think we all felt, was in not knowing whether our regiments were under fire of artillery or not. One saw a battery firing fiercely, but at whom was not known. I think it would be a good plan if each battery or half battery had a large white disc, to be turned full on to the object under fire. One of the commonest questions at the Camp was "Do you think that battery is firing at us?" and the invariable answer "can't say."

It would have been a great thing for all arms if any good newspaper reporter had been at the Camp. The letters published were uninteresting, uninteresting, dull, and generally wrong as to facts. The

Delhi Camp with its admirable Sunday camp letters had an advantage we wanted for the Indus.

I have, I hope, avoided writing a treatise on Cavalry Drill and Tactics. Such was not my object at starting. My endeavour was to let cavalry men not present know what we did and what we did not, and what I think we might have done, and to give a few hints to help comrades at future Camps of Exercise.

If I have done this, I am glad. I hope that at future Camps the cavalry division may have as pleasant a time of it as we had under Colonel Wright at Shumshabad, and may I be there to see!

OSMOND BARNES, CAPT.,

10th Bengal Lancers.

*Nowshera, May 1873.*

## NOTICE.

---

MEMBERS of the Institution who have not already done so, are earnestly requested to pay their arrears of donation and subscription, either to the Corresponding Member at their stations, or direct to the Secretary at Simla.

Many members still owe their donation and three years' subscription.

Officers, who may wish to become members, are requested to be kind enough to forward their donations and subscriptions at the same time as they express a wish to join the Institution.

HENRY H. STANSFELD, LIEUT.-COLONEL,  
*Secretary.*



## NOTICES.

---

THE Council of the Institution have awarded the "Durand Medal" to the undermentioned officers for their respective papers :—

Medal for 1872, presented to Lieutenant Colonel F. S. Roberts, C.B. v.c., R.A. for his paper "On the Equipment of a Force for Field Service."

---

Medal for 1873, presented to Captain J. A. S. Colquhoun, for his paper "On the organization of a Transport Department suitable to the exigencies of the British Army in any part of the globe."

---

The subject of the essay for next year's Medal will shortly be announced.

---

THE Map illustrating Lieut.-Colonel Newall's paper on the "Strategic Value of Cashmere," is issued with the present number of the Journal, and it is hoped that it may to a certain extent be of use to members reading the paper ; but it was found impossible to re-produce it in as complete a form as was desired.

---

It is hereby notified for the information of Members of the Institution that the Exhibition of Military Drawings unavoidably postponed from last September will be held at Simla in September 1874, all drawings intended for competition to be with the Secretary by the 1st of that month.

The Prizes will be awarded by a Committee of the Council.

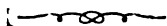
There is no limit or condition as to style, or subject of the drawings for next year's Exhibition, but it is considered advisable by the Council that only Military men should contribute. Drawings of Fortification and Artillery will also be allowed to compete.

H. H. STANSFELD, LIEUT.-COLONEL,  
*Secretary.*





# ORIGINAL PAPERS.



## I.

### ON MILITARY COLONIZATION OF THE MOUNTAIN RANGES OF INDIA.

*A Lecture delivered at the Branch U. S. Institute for India, at Dar-  
jeeling, on the 30th October 1872,*

BY LIEUT.-COLONEL D. J. F. NEWALL, R. A.



GENTLEMEN,—I have frequently been asked by respectable time-

#### Preliminary Remarks.

expired non-commissioned officers and soldiers, who did not wish to leave India, for my advice as to settling with their families in this country. "We do not see," they have sometimes said, "any opening for a decent family to settle comfortably with any prospect of providing for our children in the future ; on the contrary, we look round at our old comrades who have retired, and see Sergeant Major A, or Sergeant B and others, most respectable men whilst in the Army, who have taken their discharge in India living about the country, too often in the pursuit of some large military station, lapsing into habits of intemperance, and they and their families sinking in the social scale of respectability."

I have been too often compelled to admit that there was but too much truth in this. In considering a remedy, the idea of "*military villages*" occurred to me ; and, in pursuance of this idea, during my occasional periods of leave to the Himalayas, Neilgherries, and other mountain ranges, I made enquiries as to the feasibility of acquiring land, with some vague idea of perhaps in the future endeavouring to inaugurate, on of course a modified scale, some such experiment ; but I found the obstacles to obtaining land too great to afford prospect of success, and soon desisted. The idea however grew and fructified, and in course of time led me to consider whether *Military Colonies* fostered by the State, and forming a *Militia* or *Reserve Force* for India, might not meet the requirements of the case ; and whilst providing a future for many deserving old sol-

diers, serve also to strengthen the hands of Government, and obtain that grasp on the soil of India we have never yet possessed. I am aware, however, that the question is involved in so much difficulty, and may be viewed from so many diverse points of view, that I feel quite unequal myself to do more than propose it as a subject for discussion, and for the consideration especially of the members of the United Service Institute for India.

With these preliminary remarks then I venture to place before the meeting, for discussion, the following observations, which I have thrown together into the paper I am about to read, on "The Military Colonization of the Mountain Ranges of India," and in which I have endeavoured to place the pros and cons of the question side by side, and though on the whole inclined to advocate colonization for India, I am aware that some of my arguments and illustrations are open to cavil and might even be brought to bear against my own opinions.

*"Military Colonies" their Political, Strategic, and Sanitary Aspects.*

PART I.

1. The colonization of the Himalayas and other mountain ranges of India, or at least the establishment thereon of more sanitaria, and even *Military Colonies*, has for years past been counselled by several men of mark, and the arguments in favor of such a step have been various and strong. "Reduce," say these advocates, "the strategic points in the plains to a minimum, and locate the bulk of your British troops in the mountain ranges." Sanitary statistics indubitably point to this as an act of wisdom, and I hazard the suggestion that it may possibly be equally wise in a political and strategic sense. I have myself formerly advocated such a view of the question, and in drawing up the present paper must take leave to borrow my own words on this subject.

"2. Grants of land in fee simple might be made to veteran (and other) officers and soldiers, the latter chiefly, or entirely, to be married men of respectable character, to encourage settlement on the Himalayas and other mountain ranges. It may be remembered that Spain thus obtained a grasp on the soil of Mexico by granting fiefs or estates to the settlers, viz., officers and veteran Spanish soldiers and others called from the dominant race *conquistadores*; and to these were assigned certain native families as labourers; the whole forming *encomiendas* or small colonies, which were thus established under the ruling race, and their *haciendas* or large (unfortified) farms virtually exist to the present day; some of them under families of pure native origin; but the abuse of this *mixed system* led to the revolutions of the present century, and a native

Political aspect of Military Colonies in India.

The Colonial system of Spain, and the Mexican colonies.

"It may be remembered that Spain thus obtained a grasp on the soil of

" Dictator (Juarez)\* now rules Mexico. The vice of this system was perhaps the mixed character of the colony. No instance of a purely Spanish (European) military colony (except perhaps in the highlands of Mexico or Peru) is presented to us. In India, we have the advantage of a noble range (or ranges) of mountains in which to plant colonies, and the genius of the British character does not tend to association of races. We may, therefore, hope that a system of British military (and other) colonization of the Himalayas and other ranges might lead to a different event from that of ill fated Mexico.

" 3. The colonial system of Portugal, as contradistinguished from that of Spain, was on the other hand a strict obstructiveness to European enterprise, not unlike that of the old East India Company, and for more than three (3) centuries, Brazil was practically isolated from the rest of the world, and the admission of all foreigners interdicted. The Court of Lisbon held the reins of power and reigned through intermediate Juntas, presided over by provincial Governors. This system, however lasted over three hundred years, and at the end of that period the country afforded an asylum to the Royal family of Portugal when driven from its native seats, and a Prince of the house of Braganza now reigns in Brazil; but mark that during this long period the *Interloper* (as he was called) was kept away. It is too late for us, nor does the nineteenth century tolerate such exclusiveness to revert to that old policy, which seems nevertheless to have had an element of wisdom in it. A recognition of this seems to have operated in the counsels of our own government, and to have guided the policy of the State, which has hitherto always abstained from encouraging settlers. The traditions of the old East India Company still survive, and their sins of omission in that respect and obstructiveness to European enterprise, have taken too deep a root, to be easily eradicated. The question may be hazarded whether there be not here a means to the adequate employment of many old officers in the concession of such fiefs or grants of land as I have mentioned, and of a partial escape from the dilemma of the 'colonels' allowances' to which the State has been committed. It is suggested for consideration whether military colonies might not perhaps be thus inaugurated as one means towards the formation of a '*Reserve Force for India.*'

" 4. The mention of Military Colonies leads to that of *Hill Convalescent Stations or Depots.*  
 Convalescent Depots may be indefinitely expanded in their scope, and even developed into Military Reserve Circles.  
 " There is an obvious connection between them. Except in the matter of cultivation of land and other industrial avocations, a hill

---

\* The above was written in 1870. It is believed that "Juarez" is a full blood Pueblos Indian, the only Indian stock who have ever exhibited capacity for political cohesion or administrative talent.

diers, serve also to strengthen the hands of Government, and obtain that grasp on the soil of India we have never yet possessed. I am aware, however, that the question is involved in so much difficulty, and may be viewed from so many diverse points of view, that I feel quite unequal myself to do more than propose it as a subject for discussion, and for the consideration especially of the members of the United Service Institute for India.

With these preliminary remarks then I venture to place before the meeting, for discussion, the following observations, which I have thrown together into the paper I am about to read, on "The Military Colonization of the Mountain Ranges of India," and in which I have endeavoured to place the pros and cons of the question side by side, and though on the whole inclined to advocate colonization for India, I am aware that some of my arguments and illustrations are open to cavil and might even be brought to bear against my own opinions.

*"Military Colonies" their Political, Strategic, and Sanitary Aspects.*

PART I.

1. The colonization of the Himalayas and other mountain ranges of India, or at least the establishment thereon of more sanitaria, and even *Military Colonies*, has for years past been counselled by several men of mark, and the arguments in favor of such a step have been various and strong. "Reduce," say these advocates, "the strategic points in the plains to a minimum, and locate the bulk of your British troops in the mountain ranges." Sanitary statistics indubitably point to this as an act of wisdom, and I hazard the suggestion that it may possibly be equally wise in a political and strategic sense. I have myself formerly advocated such a view of the question, and in drawing up the present paper must take leave to borrow my own words on this subject.

"2. Grants of land in fee simple might be made to veteran (and other) officers and soldiers, the latter chiefly, or entirely, to be married men of respectable character, to encourage settlement on the Himalayas and other mountain ranges. It may be remembered that Spain thus obtained a grasp on the soil of Mexico by granting fiefs or estates to the settlers, viz., officers and veteran Spanish soldiers and others called from the dominant race *conquistadores*; and to these were assigned certain native families as labourers; the whole forming *encomiendas* or small colonies, which were thus established under the ruling race, and their *haciendas* or large (unfortified) farms virtually exist to the present day; some of them under families of pure native origin; but the abuse of this mixed system led to the revolutions of the present century, and a native

Political aspect of Military Colonies in India.

The Colonial system of Spain, and the Mexican colonies.

"yas and other mountain ranges. It may be remembered that Spain thus obtained a grasp on the soil of

" Dictator (Juarez)\* now rules Mexico. The vice of this system was  
 " perhaps the mixed character of the colony. No instance of a purely  
 " Spanish (European) military colony (except perhaps in the highlands  
 " of Mexico or Peru) is presented to us. In India, we have the advan-  
 " tage of a noble range (or ranges) of mountains in which to plant colo-  
 " nies, and the genius of the British character does not tend to associa-  
 " tion of races. We may, therefore, hope that a system of British mili-  
 " tary (and other) colonization of the Himalayas and other ranges might  
 " lead to a different event from that of ill fated Mexico.

" 3. The colonial system of Portugal, as contradistinguished from

The Colonial system of Portugal.

" that of Spain, was on the other  
 " hand a strict obstructiveness to Eu-  
 " ropean enterprise, not unlike that of the old East India Company,  
 " and for more than three (3) centuries, Brazil was practically isolated  
 " from the rest of the world, and the admission of all foreigners inter-  
 " dicted. The Court of Lisbon held the reins of power and reigned  
 " through intermediate Juntas, presided over by provincial Governors.  
 " This system, however lasted over three hundred years, and at the end  
 " of that period the country afforded an asylum to the Royal family of  
 " Portugal when driven from its native seats, and a Prince of the house  
 " of Braganza now reigns in Brazil; but mark that during this long period  
 " the *Interloper* (as he was called) was kept away. It is too late for  
 " us, nor does the nineteenth century tolerate such exclusiveness to re-  
 " vert to *that* old policy, which seems nevertheless to have had an ele-  
 " ment of wisdom in it. A recognition of this seems to have operated  
 " in the counsels of our own government, and to have guided the policy  
 " of the State, which has hitherto always abstained from encouraging  
 " settlers. The traditions of the old East India Company still survive,  
 " and their sins of omission in that respect and obstructiveness to Euro-  
 " pean enterprise, have taken too deep a root, to be easily eradicated.  
 " The question may be hazarded whether there be not here a means to  
 " the adequate employment of many old officers in the concession of  
 " such fiefs or grants of land as I have mentioned, and of a partial  
 " escape from the dilemma of the 'colonels' allowances' to which the  
 " State has been committed. It is suggested for consideration whether  
 " military colonies might not perhaps be thus inaugurated as one means  
 " towards the formation of a '*Reserve Force for India*.'

" 4. The mention of Military Colonies leads to that of *Hill Con-*

*valescent Stations or Depots.*

Convalescent Depots may be indef-  
 nitely expanded in their scope, and  
 even developed into Military Reserve  
 Circles.

" There is an obvious connection  
 " between them. Except in the  
 " matter of cultivation of land and  
 " other industrial avocations, a hill

---

\* The above was written in 1870. It is believed that "Juarez" is a full blood  
 Pueblos Indian, the only Indian stock who have ever exhibited capacity for political  
 cohesion or administrative talent.

"sanitarium may perhaps be regarded in the light of a military colony in embryo, whose garrison (so to term it) is constantly changing, by rendering the garrison permanent with veteran or time-expired soldiers, relaxing discipline slightly to adapt to circumstances, with grants of land to officers and men *mutato homine*, you have the elements of a *Military Colony*. I hazard the question, could a hill sanitarium be expanded into such a colony, and industrial pursuit developed in connection therewith, so as eventually to fulfil the conditions adverted to of a self-supporting colony or Reserve circle?

"5. Apart from their value as absorbing surplus industrial energy, and perhaps (if opened to volunteering) much of the floating vagrancy of the State, such *Colonies* would naturally be amongst the means of securing a *strategic* grasp on the soil of India, affording as they would do the germ or nucleus of a militia or *landwehr* as a *Reserve Force* to supplement the regular army; and in conjunction with entrenched camps, such as I propose to touch on in the sequel of this paper would form rallying points or refuges for the non-combatant portion of our nation in case of popular revolution.

"6. *Military Asylums* are (or could be made) similar in general features and may be called *Military Colonies in statu pupillari*, and might even be affiliated with such colonies, and the whole included within the protection of *entrenched camps*, to which subject (*viz.* that of fortifying our position in India) I now pass on as a branch of the subject under consideration.

"7. We English in India are not a fortifying race. Our theory has ever been that, when unable to meet an enemy in the field, the time will have arrived for us to vacate India; and there may be truth in this, and Heaven forbid the day should ever come when we are unable to fight our foes in the open plain; but to enable us to do this, forts, or entrenched camps, as posts of vantage are necessary, in which to place an *impedimentum* and so release the fighting element to do its *devoir* in the open field. Such *Refuges* need not be more than just strong enough to resist an attack *de vive force*, and it seems by no means necessary they should be such as to satisfy all the scientific requirements of an European military engineer.

"8. Except as a connecting chain on certain frontiers held chiefly by Native troops, small isolated forts do not seem desirable as tending to fritter away the military strength of the garrison of India, but 'Entrenched Camps' (defended and flanked of course, by redoubts) appear preferable. Exist-

Military Colonies, Depots or Asylums might perhaps be fortified by entrenched camps and so form "*refuges*" throughout the land.

A dearth of *Refuges* apparent in India, as inner defences.

Entrenched Camps advocated at a few strategic points in the plains.

"ing military stations may be defined to be (as indeed in Western India "they are always called) '*Camps*,' and by means of the increased range of modern artillery and small arms, nearly every military station in India might thus be converted into a fortified camp,\* and these remarks apply with equal or additional force to *Hill Sanitaria*, or as I would call them, when developed as proposed, *Military Colonies*, or better still '*Military Reserve Circles*,' and they need be protected only by field redoubts at the angles and salients, affording flanking defence,† this would appear, both for sanitary and other reasons preferable to continuous lines, and need not interfere with existing barracks, &c., or disturb military society, as it at present exists; and here

Employment of soldiery on Military works advocated.

"I would ask, what more appropriate task for British soldiers than to be employed in throwing up such defensive works, as I have suggested? A task, be it observed, performed daily by Roman soldiers after their days' march, the *justum iter* of near 20 miles, although of course on a scale more modified than that here recommended.‡ I mention this point also as amongst the means of enhancing the glory of the British soldier in likening him to the *Roman*, whose labours have bequeathed to posterity imperishable works of grandeur, and utility on his native soil!

"Whether Providence has willed our occupation of this foreign soil to be lasting, who can say? At present, we have no permanent grasp on it; and regarding our future from the stand point of historic study, it seems possible, that the day may eventually arrive (unless adopt further human means to avert it) when the great British nation, strong and firm as it may believe itself to be, perhaps at present is, may have to relinquish its grand Asiatic (colony I was about to say, but it is not such yet,) '*Dependency*,' and retire within the limits of its own Ocean Island Home!

"9. I have mentioned the military occupation of Great Britain

Historic parallel of the Roman occupation of Great Britain.

"by the Romans, to which indeed our position in India bears a considerable historic parallel. Be-

---

\* The Tartar quarters of Chinese Towns were evidently originally the Camps or Citadels of the conquering race antecedent to the times when the races became fused into a Chinese Nationality.

† The late Sir Charles Napier advocated defence of military stations by musketry fire, and wished cantonments to be "*closed in or doubled up*, and the Regimental Guard Houses made defensible; but it is believed his scheme did not embrace Artillery flanking fire.

‡ It has been suggested that "Shelter Trenches" and other defensive measures lately introduced into the Field Exercises of the British Army, rendered necessary by the improvement of arms of precision; are calculated to impair the aggressive courage of the British soldier; but all history and that of the Romans especially, controverts this idea. A defensive action converted into the offensive at the right moment seems that most consonant to the genius of the British soldier.

"hold, how almost completely the traces of that great event, which extended over more than two centuries have been swept away. In our case, let us hope, that if ever we should relinquish India, we may have to boast the moral and social renovation of its people at least, and possibly bequeath something more in the way of public works and monuments, than the traditional pyramids of empty beer bottles formerly attributed to us as a reproach !

"If moreover the colonization of our splendid ranges of mountains  
Possible future of India as a self-protecting colony. "be inaugurated; military colonies be fostered as reserve circles, English settlers encouraged, and the other means of obtaining a grasp on the soil carried out, we may find future Hindustan in some degree fulfilling the condition of a self-protecting colony, a consummation perhaps hereafter in the event of an European war devoutly to be wished by England, but instead of a mixed population forming the future ruling nation of India, as we see in Mexico and the South American Republics at the present day, let us hope that *British Colonists of pure Anglo-Saxon type may still be found as the National Garrison of India* ? I confess I regard our present occupation of India as a dilemma, and a compromise, but granting our desire to continue to rule it from an imperial point of view, the lesser evil would appear to be to foster colonization, and British agricultural and industrial enterprise, unless at so distant date we are prepared to hand over the reins of government to a renovated nation of Asiatics.\*

"10. To revert, Spain, it may be remembered, attempted to govern its distant colonies by means of the Cortes, as in fact, we are now doing through an *India Office* ! So far the two nations seem on the same track, but one point of vast difference exists. We tolerate free religion and thought, whereas the curse of superstition and religious persecution and intolerance rests on Spaniard. The event may therefore be dissimilar ! In other respects the Colonies of Spain in South America afford the nearest historic parallel to our present position in India, except perhaps the military occupation of Great Britain by Rome, already alluded to, and that ap-

---

\* In an æsthetic point of view the historical student might perhaps wish to save any portion of the vigorous Anglo-Saxon race from retrogression into a semi-Asiatic amalgamated Nationality, such as would result from any attempt at *mixed* colonization like the Spanish system before mentioned, but this sentimental view of the question will in a modified form apply to nearly all colonization or emigration from England, as the *parent country*. The party cry of "India for the Indians" would deem at first view to militate against the suggestions in the text ; but when Indians become sufficiently enlightened to rule themselves, the will by the mere force of social opinion assume that part, and become associated with the ruling race in political power. Is it our fixed policy to reserve India for that far-off day when the two races shall (if ever) be equally fit to rule ?



“ pears to have been a *mere* military occupation where martial law was  
 “ the law of the land, and where the military commanders exercised po-  
 “ litical powers, as far as our slender information on that particular pe-  
 “ riod of history shows. I here pause, as I find, I have exceeded the  
 “ limits of the subject I originally proposed to myself, namely, the advo-  
 “ cacy of *Military Colonies*, and as one means of providing for surplus  
 “ officers and veteran soldiers, as also of consolidating our strategic  
 “ grasp of India. Thus far I quote nearly my former words.

“ 11. *As regards the planting of military villages* adverted

Military Villages.

“ to in the preamble of this paper ;  
 “ it is understood that some such  
 “ scheme was formerly initiated in some of the larger British Colonies,  
 “ Australia, New Zealand, &c., and grants of land were made to retired  
 “ officers, both of the British and Indian forces ; but I never heard that  
 “ retired veteran non-commissioned officers or private soldiers were asso-  
 “ ciated in any way with them, and the scheme never got beyond the  
 “ crude inception, and never as far as I am aware, in the least degree  
 “ foreshadowed the coherent idea of national colonies tending to the  
 “ formation of a Reserve Force.\*

“ 12. Australia, New Zealand, and our great dependency India

Local or Colonial Armies may even- “ have no national (so to call them) or  
 tually have to be formed. “ Colonial Armies ; they may have  
 “ to form them ere this 19th century  
 “ has set ; as it remains to be seen how England will manage to main-  
 “ tain its present garrison of India and of its colonies, in the event of  
 “ being dragged into a great war, in which its utmost resources should  
 “ be taxed. In view of such a contingency many officers of foresight  
 “ and experience have thought that ultimately India will have to revert  
 “ in some sort to a “ Local Army,” modified perhaps, but still the nucleus  
 “ of a reserve in case of war in Europe, otherwise it may well happen  
 “ that India prove a source of weakness rather than of strength to Eng-  
 “ land. In such a contingency what better resource to fall back on  
 “ than ‘ *military colonies*’ in the Himalayas and other mountain ranges  
 “ of India from which to form a *Reserve Force*.

13. I would speak with diffidence and respect, but Government  
 appears always to shrink from the experiments (if indeed its fixed  
 policy be not actually hostile.) The cumbrous machine of a constitu-  
 tional government with its checks, and counterchecks prevents the wis-  
 est and most energetic rules, even though friendly to the idea, from

---

\* The old East India Company's station for retired veterans at *Chunar* in Bengal may almost be cited as an example of a military village, &c. It is on record what a distinguished part a detachment of veteran gunners from that station played during the mutiny of 1857, with Havelock's force. These men may be held to have occupied the position of a *reserve force* on small scale, albeit located in the sultry plains of India, and may be instanced as an example of what “ *veterans*” may perform in aid of Government in times of peril to the State.

inaugurating any strong policy of the kind, and between the conception and birth of a British "fait accompli," there is indeed a laborious travail ; and an Englishman however proud of the free constitution of his country may sometimes perhaps be permitted an occasional sigh for the vigorous action of an enlightened autocrat.\* Inasmuch however as the pecuniary outlay and risk would be considerable at first, it is surmised that any scheme of colonization must first emanate from the spontaneous action of the public, and it is understood, that some such step has actually taken form in view to a colony of retired officers in the Kumaon hills, but this project meets the question now raised only half-way. All classes should be included in any such scheme as is here proposed.

14. *Russia, Austria Persia, French-Algeria*, are examples of nations, who have planted *military villages*, as one means of holding their frontiers against savage neighbours, as I have pointed out in my paper on the "Defence of our N.W. Frontier," and I instanced the working of the Gunge or Ganz regiments of the Austrian frontiers as a case in point, though the colonies I here advocate would be centrally situated and on a more pacific footing than those warlike folks of belligerent mediæval days, and to be regarded more as an *inner guard* than as a frontier defence.

15. It will be seen that I have in the paper from which I have quoted advocated the establishment of Military Colonies for *Military Reserve Circles*, as a means of providing for many surplus officers of the Indian officers are more likely to accept such an offer of land and to settle in the mountains of India, than those of the British service, though the offer might be made to both services, so that the financial advantage of such a scheme, as absorbing many unemployed officers, at present a burden on the revenues of the State, seems manifest ; and, if not too long to be entered on in this paper, I may perhaps be permitted in addendum, to touch on the actual aspect of the case, whereby an "inducement to retire" not actually into uselessness, and obscurity would be offered to many officers, otherwise disposed to hang on in expectation of arriving at the "colonels' allowance" offered to the Staff and Local corps at the expiry of 38 years' service, and which looms in the distance a dark cloud on the financial horizon for 1873, and will go on till the year 1896, (attaining its effigy somewhere about 1885) with an increasing intensity to the consternation we may assume of the Financial Minister of the day.†

---

\* It is believed that at least one of the Governor General of India was friendly to the idea of "Military Colonization."

† The philosophic soldiers of Germany owe much of their success to the full recognition of the Napoleonic maxim, that the "moral is to the material" as 3 to 1," vide also the (Red) Prince Charles Frederick's admirable lecture (published in 1860) "On the manner of fighting the French."

16. The improvement which would thereby result, both in the physical and moral health of the soldier, scarcely admits of question.

Apart from the saving of the man's life and strength for the service of the State, which will be touched on in the sequel of this paper, is it nothing to render his life brighter and happier? less lost in the lethargy and recklessness induced by continued residence in tropical heat?

Is it nothing to fortify the soul and spirit of the soldier, amidst the grand aspects of nature, and the breezes of a temperate zone?\*

Sometimes, whilst gazing on the charming landscape perchance in fair Cashmere or green Kangra; or on the grassy slopes and downs of the Neilgherries, and mountains of the western watershed; or even perchance at this tea-growing "bright spot Darjeeling,"† the idea has occurred to me that haply in this fair land may hereafter arise the homes of a happy Anglo-Saxon population; perchance in times to come of cheerful English homesteads, amidst the orchards and sheepwalks of the north; or the tea and coffee gardens of the south; in which the Indian veteran might cultivate his plot of land, and rear a healthy family, his robust sons growing up, the future defenders of the State.

A fairer picture this than the life of the loafer or hanger-on of military pothouses in the plains; and the sad sight of the poor soldiers' children carried to an early grave in the howling cemetery of some unhealthy cantonment in the plains! I have pictured to myself in Cashmere and elsewhere a land teeming with plenty, its marshes drained and productive, thousands of fat cattle and sheep grazing on the rich pasture land and grassy mountain sides; and golden grain waving in every nook and "coin of vantage;" the blue smoke of rural cottages and English homesteads curling through the foliage; and peace and plenty crowning the fair scene. And then again, should the clouds of war arise, and danger to the State, I have pictured a robust and valiant population—"The Reserve Force of India"—ready to descend full of health and confidence on the foe! These ideas are perhaps *Utopian*, but after all why should some such future for the mountains of Hindostan not be?

I need not however grow eloquent, or indulge in rhetorical platitudes; nor must I forget that I am addressing a practical calm-judging audience, to whom such effusion might savour of charlatanism. I seek not to raise a sentimental sympathy, but to suggest a point of practical utility.

I now pass on to the "Strategic" aspect of the question.

---

\* Moral advantages to the soldier likely to result from military colonization.

† Darjeeling or "Dorjegliling" means *bright* or *holy spot*.

## PART 2.

17. The occupation of a ridge of mountains forming the watershed, whence issue the rivers which fertilize the adjacent lowlands, must at once strike the eye of the military critic as the true line of domination of the plain country embraced within those rivers.

Strategic aspect of Military Colonies in India.

18. There is one hill country (were it ours) above all others, calculated both from its topographical features, as well as its geographical position, to afford flanking strategic value for "military colonies" such as I advocate, and that is *Cashmere*.

Cashmere (and the Kohistan of the Punjab) affords valuable strategic sites.

This position I have sought to establish in a paper entitled, "The Strategic Value of Cashmere," in connection with the defence of our N. W. Frontier, wherein I have sought to prove that the flanking value of that country, as commanding the Doabs embraced within all the five Punjab rivers, is inestimable, and should form a prominent feature in any imperial scheme of defence for the Punjab and North Western Frontier. If that position be once conceded, it follows as a corollary, though perhaps with less emphasis than in the more marked case of the Punjab, that the mountains flanking the entire Gangetic valley, and the watershed whence issue the rivers that flow into it, must in like manner be the true crown of domination of the deltas embraced by these affluents.

19. Instance, that troops massed in hill stations between the rivers Sutlej and Jumna, (*i. e.* Simla and its neighbouring stations,) are free to march and deploy on the whole Cis Sutlej states and N. W. Provinces, without the obstacle of any intervening river, as was instanced during the mutiny of 1857, and an Indian river during much of the year is an obstacle, and a very real one!

Himalayan hill stations should command the Cis Sutlej states, N. W. Provinces, and the entire Gangetic valley.

20. Again, troops in the ranges of Kumaon, south and east of the Ganges (at present represented by the group of Hill stations, Nainee Thal, Ranikhet, Almora, &c.) command Rohilkund, Oude, and perhaps as far as Behar and Tirhoot east of the Ganges.

Kumaon and British Gurhwal command Rohilkund, Oude, &c.

21. Troops at Darjeeling and its vicinity should command Southern Tirhoot and Eastern Bengal up to the Brahmapootra and so on.

British Sikhim should command Southern Tirhoot and Eastern Bengal.

The principle doubtless admits of modification and exceptions ow-

ing to a local causes and obstacles, but is nevertheless a principle, and I believe a valid one.\*

22. There certainly is at present an independent state, wedged in as it were between our Hill territories, whose strategic position is a standing menace to the adjacent plains east of the Ganges : I allude to Nepaul. Were it ours, there is probably no point of India more favorable for " Military Colonies," both from its soil, resources and strategic position. Happily like *Cashmere*, it is at present ruled by a prudent Chief, fully aware of the value of the British alliance.

Nepaul, a standing menace to provinces east of the Ganges.

Would probably afford some of the best sites in India for colonies if in our own territory.

23. I do not insist on that aspect of the case, however, which in poetic phrase would liken an army descending from the mountains to the torrents which pour downwards, to overrun the plain country at their base ; though History indeed may be cited to supply us with numerous instances, where a brave and hardy though undisciplined host, pouring forth from the wild Alpine highlands, have swept before them the enervated and luxurious people of the plain country ; on this point however we must not forget that *wealth*, that sinew of warlike power, is more

Wealth, that sinew of power, more often generated in the plain than hill country.

Alp, and that there are still more frequent instances in History of power organized in the plains climbing by conquest, higher and higher, up the adjacent mountain, and so ultimately absorbing and subduing the hardy mountaineers than the converse ; and in truth the position might perhaps be more aptly compared to the blessing of vegetation and fertility climbing from the plain, higher and higher up to the snowy solitudes. Happily we possess both.

24. *The Hills for the European, and the plains for the Asiatic soldiery.* Let us then apply the wealth of our rich and fertile lowland possessions, to the maintenance of a hardy and disciplined *Reserve Army* in the mountains, recruited from a robust and valient Anglo-Saxon population such as would arise from Hill Colonization in the cool and temperate zones of the Himalayas, Neilgherries, &c., to support our mobile British and Indian Forces.

25. It must be remarked however, that the Himalayan ranges, though so vast and extensive, by no means contain so many sites for agriculture, and other industrial pursuits, suitable to a European race, as might

Favorable sites for colonies not so numerous as might be supposed in our present Hill possessions.

---

\* To facilitate their progress to points in the plains where they might be required, railways to the foot of the hills from the main lines are an obvious necessity.

at first glance be supposed : plateaux, presenting conditions favourable to such, are comparatively rare ; in existing stations much of the land is poor, cold and clayey ; and though the upper stratum be rich, the thin black soil is rapidly washed down the steep hill sides ; and on the other hand they are intersected by hot and steamy valleys, which during much of the year are the very nurseries of fever, cholera, and other dire scourges of the human race. Careful selection would be necessary. Sites however might be found and colonies established ; and at the most obviously valuable strategic points, these should be protected by *entrenched camps* or *refuges*. The Kangra and Kumaon districts may be instanced ; Eastern Bengal presents fine land for tea planting and

Neilgherry plateau.

Southern India presents its noble Neilgherry plateau, its Putney and Sheveroy Hills, and its raised Mysore table-land, dominating the Southern Carnatic, and the country embraced by the rivers Cauvery and the Kishitna ; whilst the Bombay Presidency has its Western Ghats ; and

Western and Central Watershed.

the elevated spurs of the Vindhya and Arravelli ranges ; these last dominating the doabs or deltas embraced by the Tapti, the Nerbudda and the rivers from the western and central watershed. I have not the space, nor indeed the special local knowledge, to lay down precise opinions on this branch of the subject.

26. This theory of a defensive system does not of course exclude

*Refuges* in the plains at a few strategic points, should be formed for internal defence.

strategic points to be held throughout India, which however should be reduced to a minimum, and as before suggested be defended by redoubts

as refuges.

I have now nearly exhausted this branch of the subject or rather

The watershed of a country contains best sites strategic, sanitary and perhaps political, for military stations.

my slender information on it, and will simply re-assert the proposition before enunciated, *viz.* that as a rule the watershed of a country may be held

to contain, in every view of the question, strategic, sanitary, and perhaps political, the most favourable points for Military Cantonments.

27. Should Providence will it, the time will probably arrive when the discovery of *gold*, metals, or other attractive magnets, will draw to these

Possible influx of population to the hills in the future.

mountains the energetic classes of this earth, and so establish a vast population in these hitherto barren and

sparsely inhabited Alpine regions : current history presents to our view

---

\* It would become a subject for consideration as to what supplementary employments we should put our military subjects to. Many will suggest themselves. There is abundance of water power, metallic wealth, timber ; the Fauna and Flora of the Himalayas, especially, are inexhaustible, and have been but little analysed.

many such parallel cases in barren regions of the world's surface, but gentlemen, before concluding this lecture, I have just one remark to make, which I trust may not be inappropriate in addressing an audience of Christian British Officers.

28. Granting the validity of the human reasons adduced for the colonization of these vast mountain regions, which if carried out, would

Probable tendency of such to perpetuate our rule of India.

assuredly confer on our race the national dominion of the great Indian Peninsula "in secular seculorum,"

there still remains the will of an over-ruling Providence" as to its success! Has Providence willed us to hold India as a colony? or, after years of occupation to hand it over to a regenerated Indian nation? In short is our motto—*India for the English* or *India for the Indians*?

In the march of nations, the least religious mind, if observant, must perforce recognise the element of destiny or design as guiding this world's development. Secondary causes are all we can control, and what appears to the superficial "chance," is in fact an over-ruling Providence, directing and turning the pivot, on which events hang. At the hour ruled by Omniscience, the impetus to a certain line of political exigence is given, and then in spite of all human endeavours the march of destiny is commenced, and Almighty wisdom can alone foretell where the result will land us.

29. Applying these remarks to the case under consideration, let us hope that the action of our country may lead us, under the guidance of an over-ruling Providence, into the channels best and wisest, and most conducive to ends, fraught with happiness and moral and material elevation, both to ourselves and the millions committed to our charge; otherwise we may be sure that the blessing will be withheld, and the action, entered on in our shortsighted human wisdom, be as nought in the great march of human civilization.

---

30. I will now, with the permission of the Chairman, surrender the rostrum to the able and scientific officer, who has kindly prepared a paper on the sanitary aspect of this question, which he had wished me to incorporate in this paper; but as I am sure you must have by this time heard enough from one lecturer, I have prevailed on that gentleman to read his own paper.

31. The details of any such scheme as has been here proposed must form the subject of a second paper, should the opportunity of drawing up such present itself. The subject evidently requires much patient thought and elaboration of wise heads, to reduce it to within any thing like practical limits.

It now, Gentlemen, only remains for me to thank you for your patient attention to my somewhat protracted lecture.

D. G. NEWALL, COLONEL, R.A.

*Lecturer.*

*Darjeeting, 30th October 1872.*

---

GENTLEMEN,—Colonel Newall has requested me to supplement his paper, which you have just heard him read, on the Military Colonization of the Himalayas, with a few remarks tending to show the advantages which might be expected to accrue, from a health point of view, upon the adoption of some such measure as that which he has proposed. I would preface my observations by saying that, in scarcely a single instance do they possess the attraction of novelty, having been made in public on previous occasions by others or myself.

Many years ago Hindoo Rao of Gwalior, it is said, remarked,—“What fools those English are! Had I such soldiers as they have, I would place them on the hills and keep them there in health and strength until I wanted them. When there was fighting to be done, I would bring them down on elephants, and horses, and bullocks, and let them loose upon the enemy, like so many cheetas. What could stand before them?” If alive at the present day, this wise old Prince would doubtless fortify his admonition by an allusion to the railways, which now exist, or are about to be constructed, in the vicinity of our principal hill stations. These railways, in affording increased facilities for the conveyance of our troops to the scene of an *emeute* in distant parts of the country, would, if I mistake not, lead the Rao to suppose that we English are even greater fools than he thought us, because we continue to expose our soldiers in such large numbers to the enervating and deadly influences of life in the plains of India.

About ten years ago a Royal Commission concluded its labour of inquiry into the sanitary state of our Army in India. The revelations made before this Commission disclosed the appalling fact, that during the sixty previous years, the European soldier in India suffered a mortality of sixty-nine per thousand per annum, that is to say, about seven soldiers died then out here, for every one who now dies in our army at home. To counteract this terrible death-rate the Commissioners made numerous recommendations for the better preservation of the health of our troops, and many of these recommendations have been acted upon. To what extent the sanitary improvements so carried out have resulted in the saving of life, it is not easy to say; because during the last decade the number of men every year invalided home has been very largely increased. The bearing of this increase of invaliding on the Indian death-rate is obvious; for in this way we get rid of



weakly men, who, if allowed to remain in this country, as in former years was usually the case, would be all but certain to die very soon. We are thus surely transferring some of the units which, under the previous system, would have occupied places in our Indian mortuary returns and hospital wards, to our depots and poor-houses and grave-yards in England. My own opinion is, that our soldiers would now die and sicken in the plains, in not largely diminished numbers, compared to those of ten years ago, if the invaliding rates had not increased to so great an extent, as it has during the same period.

As bearing on my assertion that the casualty rates of the Indo-European army, stationed in the plains, have not been really very materially lessened of late years, and as introductory of another portion of my subject, I will, if you please, make a few remarks on the health of our soldiers' children in India. I cannot perhaps do better than cull from a paper on the topic which I last year contributed to the *Indian Medical Gazette* :—" Dr. H. Macpherson tells us, that the annual mortality amongst the children of our European soldiers in India, during the four years ending in 1854, was 68·83 per thousand. From that time until 1864 we are not in a position to say what the death-rate has been ; but the Sanitary Commissioner informs us, that in the six years 1864—69 it has averaged annually 94·41 per 1000 in Bengal. These figures tend to prove that within the latter period, these little children have died nearly half again as frequently, as their predecessors died about twenty years ago. We further glean from the Sanitary Commissioner's statistics, that of the six years to which they refer, the death-rate of the last three is uniformly greater than that of the three first years ; while for the last year of all, 1869, is reserved the unenviable notoriety of being the period in which 145·22 out of every 1,000 European soldiers' children fell victims to disease in Bengal. We need not stop here to investigate the causes which have led to this enormous increase of mortality. Suffice it to say, that the always lamentably large death-rate amongst our soldiers' children is increasing, notably of late years, in the teeth of the numerous sanitary improvements, which in these years have been introduced. We do not, of course, wish to be understood as speaking disparagingly of the sanitary improvements of our time, although there may have been one or two which have not had our unqualified approval ; but we do emphatically assert, that appropriate and sufficient measures of disease prevention, applicable to the maladies of children, could not have been adopted prior to 1869, or we should not have to record the loss of 826 children out of 5,688 in that one year in Bengal. Taking the average of the six years, 1864—69, and speaking roundly, *the children of our European soldiers, the very large majority living in the plains, have in each year been all but decimated.*

Now, take one of the Lawrence Military Asylums, for example that at Murree, containing soldiers' children of precisely similar parentage to those who, with their parents and regiments usually in the plains,

die with such fearful rapidity and see what is the condition of things there. The children in the Lawrence Asylum at Murree live in an excellent climate, 6,500 feet above the level of the sea, and are provided with a very liberal diet, with what results, as regards health, let the following figures show :—" Since the Asylum was opened in 1861, it has afforded shelter to an average annual number of 85 children of both sexes, and at ages varying between 5 and 14 years. These children are in rude health; only three out of their number being "constantly sick," and in ten years they have lost only six by death, one a case of accidental poisoning, another due to cholera, two more or less attributable to disease contracted at Peshawur, the remaining two being caused by lung affections. Again—take the Mount Aboo Lawrence Asylum, in which, as Dr. Moore tells us, during the five years ending 1870, only one death, and that from epilepsy, occurred among an average number of 50 children of European soldiers. Lastly—take the Loretto Convent, Darjeeling, containing an approximate annual average of 70 children—of somewhat a better class than those in the two before-mentioned institutions. Here only one death occurred in twenty years. We have not instanced these three establishments, because we have reason to know that their inmates enjoy better health than those of kindred hill seminaries. We bring them forward partly because of their varying geographical positions, and partly because the information concerning them was more easily obtainable by us. We submit that these three examples are sufficient to prove our position, that climatic and dietetic shortcomings, taken together, are the chief causes of the excessive mortality amongst our soldiers' children,—for in these two particulars alone is there any difference between the circumstances under which the children in the hill schools exist, and those who are with their parents and regiments, usually in the plains. In 1868, 513 children, accompanied by their parents, were located with their regiments and in depots in the hills, the death-rate among them being 68·2 per 1,000 per annum, against 88·9 amongst the 4,442 children during that year resident in the plains. In 1869, 564 children in the hills exhibit a death-rate of 89·0 per 1,000, while the mortality in the same year amongst those in the plains mounted up to 149·0 per 1,000. Taking the difference between the loss of life during these two years (the only ones the Sanitary Commissioner's published statistics enable us to deal with)—in the hills and in the plains—we find it amounts to 39·9 in favor of the hills. That is to say, although the mortality was very much greater than it should have been, or than it would have been if the children had been suitably and sufficiently fed,—the removal of a certain small number of them saved, in one year, twenty little lives out of every 500 so removed. This saving of life is, we take it, solely due to change to a good climate; as soldiers' children, while with their parents, are equally well (or ill) fed, housed and cared for in the plains, as they are in the hills."

We thus see that while the mortality amongst our soldiers in India, although reduced by what I may call an artificial measure, increased

invaliding to England is still very great, the mortality amongst their children has very largely increased. Why?—Partly, I believe, because we do not invalid the children when they become ill, and partly also because the value of food fitted for the nutriment of children has become largely enhanced of late years, while the soldier's child Government stipend of Rs. 2-8-0 a month is unincreased. I have already shown you that sending soldiers' children to the hills, without feeding them better, or in any other respect altering their condition, is followed by a saving of about forty lives out of every thousand in a year. Let me now give you a few illustrations of the good effects of a hill climate upon the health of the soldier himself:—

My own regiment, the 58th Foot, was up at Senehal, about 3 miles from here, during the years 1866-67 and 68. Although we arrived there in a very sickly condition indeed, having had a great deal of illness at Benares in 1865,—when Senehal was as bleak and misty as you all know Senehal can be, and when the ground was thickly covered with snow, we all got strong and hearty at once. In the three years we remained at Senehal only five men died, out of an average annual strength of 435. You will be better able to appreciate the smallness of this death rate when I tell you that the mortality amongst the soldiers serving in the United Kingdom at the same time was proportionately more than twice as great. Our Left Wing which remained at Benares during the three years, the Right Wing was at Senehal, lost seven times as many men by death, and invalided to England twice as many, in proportion to strength, as the right wing did while it was in the hills. Neither had the left wing any, for the plains, unusual sickness to contend against. There was nothing whatever to account for this amazing contrast except the difference between the climate of the two stations. The men of both wings were of the same stamp, and the care taken of their health was equally great at Benares and at Senehal. When the two wings of the 58th recruited at Allahabad early in 1869, a great deal of sickness, including a severe and prolonged Cholera epidemic, occurred in the regiment; 123 men having died and 83 been invalided home in the year. As it has been more than once publicly asserted that the men of the wing fresh from the hills (Senehal) suffered during that year in a greater proportion than the so-called "seasoned" men from Benares, I wish to state emphatically, and as the result of close personal observation, that, in my opinion, such was not the case. The "hill men" and the "seasoned" men appeared to me to suffer in equal proportions.

Again, the Sanitary Commissioner with the Government of India in his last report writes:—"Both as regards sickness and mortality Dugshai shows for 1870 a smaller ratio than that of any station" in the United Kingdom. Dr. Bryden's report to Government on the employment of British soldiers at road making in the Punjab, Himalayas during the seven years' 63-69, contains further striking evidence of the salubrity of the climate of these mountains. About 2,500 men were

employed on the making of hill roads, and excluding deaths brought about by accidents incidental to such employment, their death rate was only half what it is in the army at home ; and further more these men had to work in the open air during the rainy season.

But why should I go on, as I might almost indefinitely, multiplying instances in proof of the wonderful salubrity of our hill climates; taken from comparatively distant times and places, when at the present moment and in this hall, I see so many robust faces and forms, practical illustrations of the truth of my remarks. Darjeeling is garrisoned by about 200 Europeans, one-half of whom, remember, are up here because their constitutions have been shattered by previous residence on the plains. And yet, as you are aware, we have during the past nine months lost only one man by disease ; while one small barrack room, as a rule, more than suffices for the accommodation of our sick, in the place of our hospital which is undergoing repairs.

The Royal Sanitary Commission, to which I have already alluded, after hearing and weighing the evidence given by such men as Lord Lawrence, Sir Henry Durand, and Sir Ranald Martin, made the following recommendations regarding the geographical distribution of our European Army in India:—

1st.—To reduce to a minimum the strateg'c points on the alluvial plains, and to hold in force as few unhealthy stations as possible.

2nd.—To locate a third part of the force required to hold these points on the nearest convenient hill station or elevated plain ..... and to give the other two-thirds their turn."

How far this, to my mind, the most sensible and practical suggestion made by the Commission, has been complied with, I shall tell you. In the report of the Sanitary Commissioner, for 1870, I find that in that year, of the total of 33,300 European soldiers serving in the Bengal Presidency there were 27,600 in the plains, and 5,700 or about *one-sixth* in the hills. And this year ('72), I have reason to believe, things are in very much the same condition. So that, notwithstanding our improved means of communication we keep about 6,000 European soldiers sweltering and sickening and dying in the plains, who, if the recommendation made nearly ten years ago by the Royal Commission had been given effect to, would be, instead, healthy and happy in the hills. I earnestly hope that we shall soon see this much needed reform carried out, or better still, largely, exceeded. When or where is a more competent agent for the execution of such a measure likely to be found, than in the person of our present humane and able Commander-in-Chief? There are now about 2,500 married *privates* located with their families in the plains of Bengal. I trust that in any comprehensive scheme for moving a large body of soldiers to the hills, these men for their children's sakes, may not be forgotten. The Benedict private would be, I should think, but little missed when he leaves his regiment, and he might with ad-

vantage to himself, his family, and every body else, be permanently located in the hills so long as his regiment should remain in India. The number of sites at our disposal, and the facility with which admirably adapted huts can be constructed, leave little excuse for delay. When placed in the hills, the married soldier should be allowed to remain as much as possible undisturbed, as permanent location would tend to develop in him a taste for agricultural, and other profitable pursuits. A partially self-supporting *reserve* might thus in time be formed. These married soldiers hill cantonments would simply be healthy nurseries, which, under proper supervision and management, would afford us yearly a batch of hardy, well-trained recruits for our Indian Army, on the spot, thus saving the great expense of importing an equivalent number of frequently undesirable recruits from England. The Indian Government, helping to feed, cloth and educate these children, should have a claim upon their services when they arrive at manhood, and might thus supply itself with good material for the manufacture of that every-day-more-difficult-to-be-obtained commodity, efficient non-commissioned officers.

J. D. AMBROSE, B. A., M. D.,

*Asst. Surgeon, 58th Regt.*

*Darjeeling, Sept. 1872.*

---

No. 1.

*Precis of Proceedings of a Meeting of the U. S. Institute for India, held at Darjeeling, 30th October 1872.*

ON THE CONCLUSION OF THE LECTURES.

The Chairman (Brig. Genl. W. L. Ingall, C. B.,) invited members present to make any observations that occurred to them whereupon.

*Colonel H. H. Maxwell, R. A.,* in a few concise words expressed his doubts as to the practicability of any such scheme as proposed on the grounds that the native cultivators could always undersell the European—his rate of living being 1-7th less. That he doubted whether any European soldier by his unaided labour, and that of his wife and children, could make his livelihood as suggested, and that if an artisan, there was no market for his produce. It had been suggested that a European could support himself and family on 3 acres of growing tea—but could he pick it? on the whole does not see how a colony of the kind proposed can be self-supporting.

*Lieutenant Colonel D. J. F. Newall,* (the lecturer) said, the Military Colonies (or circles) suggested might be composed of various artisans, besides shepherds, husbandmen, &c., whose crafts would supplement each other, and that many sources of industrial labour besides that of agricul-

ture, would arise, and even native labour might be availed of to supplement that of the skilled European artisan or agriculturist, and the rearing of livestock would form a considerable feature.

Hitherto speculators had been content to scratch the earth, and put in a little Tea or Potatoe seed here and there, but the resources of the Himalayas and "Kohistan" of India were enormous, and almost totally undeveloped metals. Timber, a splendid Flora, containing valuable products, water power to any extent, and probably gold and gems, are known to exist.

Besides this, these *Military Colonies* or *Circles* would be under partial discipline, and liable to Military service as Militia or reserve, for which they would receive pay calculated to eke out their gains as industrial producers. But even supposing that, with all these openings to profitable labour for a time,—until indeed increased population, should bring a sufficient market and consumers for the industrial producers as suggested—the colony could not at first support itself, still it might be asked, is it not worth the while of Government to incur some outlay at the outset in order to organize a strong *Reserve Force for India*. The *Chairman* then asked Dr. Ambrose as touching Colonel Newall's portion of the lecture, whether he could affirm that the British Soldier or colonist would not degenerate in the third generation even though located in the Himalaya and other ranges?

*Dr. Ambrose* in reply said that he had no data on which to found an opinion, and that it was simply a matter of experiment.

A discussion ensued in which several gentlemen took part, *Captain H. L. Gwyn, R. A.*, alleged that the Australian Colonists in the 3rd, or 4th generation greatly deteriorate in physique, so much so that without refreshment from the parent stock they practically became worn out and useless.

*Captain Henderson*, Her Majesty's 107th Regiment, instanced that to the best of his belief all efforts at colonization under most favorable circumstances in the Neilgherry plateau had failed owing to causes mentioned by Colonel Maxwell.

*Dr. Duka* stated from his experience whilst in Medical Charge of the Lawrence Military Asylum, Simawur, that, but few recruits for the British Army were furnished from that source. The youths brought up there on reaching manhood preferring to pursue avocations more conducive to wealth than that of soldiers.

*Rev. T. Orton* adverting to *Dr. Ambrose* advocacy of removing soldiers' children to the Hills, instanced the awful mortality of children and adults in the Peshawur valley during his incumbency of 1869-71. The *Chairman* stated from his experience that some colonists—instance Canadians—were even improved and finer men, than the average of the parent stock from which they emigrated.

*Lieutenant Colonel Newall* suggested, that doubtless England produced about the finest stock, both of men and animals to be found on earth ; but even granting a slight declension in physique on exportation to foreign climates, was that a sufficient argument against colonization as proposed ? Such a principle if pushed to its logical conclusion would practically put a stop to nearly all emigration and colonization from England.

*The Chairman* then finally addressed the meeting (at which a considerable number of non-commissioned officers were present) ; pointed out the improvement in the condition of the soldier within his experience, and expressed his opinion that whether called on to face the enemy or the climate, that British soldiers must do their duty wherever located.

The Chairman then moved the thanks of the Meeting to the Lecturers, and the Meeting was dissolved.

D. J. F. NEWALL, LIEUT.-COLONEL, R. A.,

*Corresponding Member.*

#### NOTE BY THE CORRESPONDING MEMBER.

It will be seen from the above that the exact question raised has not been disposed of, that the conditions of a *Colony* or "*Military Industrial Circle*," as suggested, have not been tested ; and any inferences founded on partial experiences or approximate attempts in that direct line are out of the argument ; which is still before the Society for further discussion.

D. J. F. NEWALL, LIEUT.-COLONEL, R. A.,

*Corpdg. Member, U. S. Institute for India,*

*at Darjeeling.*

*Darjeeling, 30th October 1872.*

Precis of Proceedings of a Meeting of the U. S. Institute for India, held at Darjeeling on the 28th November 1872.

*Captain Henderson* having concluded his lecture, the Chairman (*Colonel H. H. Maxwell, R.A.*) invited gentlemen present to discuss the subject now, for the second time, brought before the meeting.

*Lieut.-Colonel D. J. F. Newall, R. A.*—"Having already delivered a lecture on this subject I had not proposed offering any further remarks on this occasion ; but I may observe that I advocate a greater infusion of the military element in any such "colonies" or "reserve circles" than is apparently contemplated in the able and practical lecture we have just heard read. I think that a military commandant with a regular working staff should form part of the scheme : the whole being under modified Martial Law.

Allusion has been made to the probable difficulty of inducing young soldiers to volunteer as colonists at the conclusion of the first term of service ; a period of life, which was assumed to be that most favourable for the success of a Military Colony, and their being married men was made a *sine qua non*. This may be admitted, but it occurs to me that inasmuch as there are probably thousands of young soldiers in India, who would gladly marry, did the regulations of the Army admit, I would suggest that the permission to do so on volunteering for a "Reserve Military Circle," might form a very attractive "*ad captandum*" argument to induce them to come forward. We hear of shiploads of British girls being taken out as emigrant wives to Australia and other colonies—why not to India ? should such a scheme as suggested be inaugurated.

It is my opinion, founded on the laws of nature, that the absence of marriage, and of woman, and her influences, in India amongst the British soldiery, is one of the chief causes which prompt time-expired soldiers in India not to re-engage at the expiration of their first term of service !

The possession of a "*placens uxor*," a *help mate* for the colonist, in any scheme of military colonization, seems quite indispensable. But I would not exclude veteran soldiers from volunteering for such colonies, for we may assume that soldiers, who have renewed their periods of service with a view to remaining in India, must have become attached to the country, and would probably come forward to volunteer as colonists more freely than the younger soldier with other lines of life open to him at home.

On the other hand it may be admitted, that it is doubtful, whether the old soldier would make a good industrial colonist ; perhaps, however, if married, as presupposed, his growing family might help him in his capacity of "bread winner," and as already instanced in my lecture on the



subject at our last meeting, veterans played an important part in the field during the mutiny of 1857, and we may assume would do so again in times of peril to the State.

With regard to local industrial pursuits, I may mention, that during a short tour to the Western Frontier, I observed land of a fine arable character, specially adapted for potatoes, and most cereals on a ridge to the North Western extending from "*Kanjullia*" outpost (which commands the roads to Nepal,) to the *Goke* outpost (which commands the roads to Sikhim). This spur appeared suitable, both topographically and strategically, for the location of a military village.

As regards the "*Damsong*" and *Kallaifong* plateaux to the east across the river *Teesta*, which have been alluded to, I have not yet visited the district, but we may assume that they present excellent sites for such colonies. No doubt plenty of sites could be found throughout the land were the proposition for locating colonies once accepted.

During my tour I saw bricks (Nepal is famous for them); could not Europeans make them? I saw large droves of *fine fat hogs* being driven down from the upper country: could not Europeans raise and educate them in the oak forests which fringe these arable plateaux, and where tons of fallen acorns now perishing on the ground present appropriate food? *Bamboos* grow to any extent and clothe the hills to their summits. These seem to present an industrial material to the cabinet maker and weaver. Indeed, I am surprised that enterprise and ingenuity have not in this district long ago turned them to account. In the floral kingdom I noticed *madder*, *aconite*, *wormwood* (lower down), *cardamums*, a few *fruit trees*, especially the *mulberry*, suggestive of industrial fabrics and pursuits. I need not name *tea*, *timber* or *grazing ground for sheep*, a stock now becoming so scarce not only in this district, but throughout India. On the whole locally, this appears a favorable district for one of the experimental colonies suggested.

*Dr. Duka* after eulogizing the practical nature of Captain Henderson's lecture said, the pros and cons of such a scheme were doubtless great, but that in view of the enormous advantages and accession of strength to Government, could such colonies be successfully established, it appears well worth the while of Government to undergo the small outlay mentioned as an experiment. The scheme if successful, would amply repay the outlay, but, if not so, the loss would be comparatively trifling.

*Dr. Ambrose* supposed, that as allusion had been made to a Medical officer for such colonies, that a regular commandant or governor and staff would also be necessary or desirable. The financial scheme had not embraced or fully provided for such. He doubted whether judging from the flow of emigrants from the mother country, it would be so difficult to populate the colonies as the lecturer represented, and would like to see a careful estimate made of the total cost to Government of say, three hundred private families for ten years in the plains, due allowance

being made for increased mortality in the plains ; this estimate to be set off against that for keeping the colonists during their first ten years.

*Mr. Cameron*, as a tea planter, might perhaps venture to suggest that in any allotment of land to colonists, care should be taken that longitudinal slips should be told off to each settler, in such way that the advantages of water-way, percolation, and fair share of fertility be equally divided.

*Colonel H. H. Maxwell, R.A.*, (the Chairman) then invited any non-commissioned officer or others to make any remarks that occurred to them, but none appearing desirous of doing so, he after a few words of caution as to entrusting any large grant of money as suggested to an intended soldier colonist (who might bolt to Australia,) moved a vote of thanks to the lecturer, and the meeting was dissolved.

D. J. F. NEWALL, LIEUT.-COL., R. A.,

*Corresponding Member U. S. I. for India.*

*Darjeeling, 28th November 1872.*

---

#### NOTE BY THE CORRESPONDING MEMBER.

The question has evidently been much advanced by the able and practical paper read at to-day's meeting, but it still seems a desideratum that plans and estimates of habitations, stores, seeds, implements and general stock should be given. Members will be invited to frame such so as to reduce the actuarial aspect of the thing to a close figure.

During the discussion it was instanced by Colonel Newall, that the European working parties in the Punjab Hill stations, Murree, Dalhousie, &c, hut themselves before the rains set in each year by their own unaided labour ; in short play the part of the squatters, pioneers or colonists of other regions.

*Reviewed Discussion on Military Colonies and Reserve Circles in the Hill Ranges of India.*

IN venturing, at the request of Colonel Newall, to re-open the discussion upon the fore-going subject, I must ask the meeting to extend to me an indulgence unneeded either by Colonel Newall, or by Dr. Ambrose, who so ably supplemented the original address. Unfortunately I possess neither the varied experience, the intimate knowledge of localities, nor the historical research of the one, much less the special professional knowledge of the other ; but to neither of them can I yield in the interest I feel, and for many years past have felt, in a project, the object, or rather I should say the many objects of which, must commend themselves to the hearty approval of all who have the interest of the British soldier, his wife and children at heart ; and as I may reasonably suppose that the subject has some claim upon your attention, I shall without further waste of words proceed to put before you the results of some enquiries I have lately instituted, some reflections that have occurred to me, and some hints that I have received from men and books, regarding the matter we have met to discuss.

Perhaps I should first apologize to the meeting for commencing at what is deemed by some of you to be the wrong end of the question, but though it may appear to be so, I do not think that on examination it will be found to be so ; in the desirability of the scheme we all concur, and so far am I from assuming its feasibility, that I must tell you honestly at the outset that I entertain very grave doubts about it ; but I do think that we shall be in a better position to decide authoritatively on that point, when the Meeting is in possession of details as to the nature, extent, and scope of what we purpose to establish ; and these I now intend to furnish in as clear, practical and brief a manner as possible, considering the difficulties which meet us at every step, and which I may mention have been considerably lightened by the assistance derived from the experience and intelligence of the staff sergeants and others with whom I consulted on the points most familiar to *them*, and whose answers and opinions I have here for reference. My object in having recourse to them was, that they are for the most part men of considerable length of service and consequent experience ; they have been for the most part sometime resident either at this, or at some other Hill station, and they are nearly all married men, and having struggled from obscurity into positions of independence and trust, are not likely to be impulsive, enthusiastic, or unduly imaginative ; and for my own part I cannot but think, that the opinions of a body of men, representing as they do most favorably the class from which we hope to draw our colonists must be of considerable value.

Doubtless you all recollect the famous "recipe" for making "hare soup," on the same principles I suppose that the greatest requisites in a colony are colonists ; it behoves us therefore at once to ascertain, what are the essentials in a good colonist, the best source from which to obtain him, and how to entice him to join us. The colonist then should, I

think, be an able bodied man, between the ages of 20 and 40, of respectable character, thrifty and industrious habits, acquainted with some useful common trade, or at least a fair agricultural laborer, and last but by no means least, I think, that he should be a married man, for it will I suppose be confessed that in the formation and perpetuation of a colony women are desirable, if not indeed indispensable ; and as I shall presently point out the success or failure of any colony must be in a large measure due to the agency of women.

So much then for the manner of man whom we require. The next question is where to obtain him. Now, if the colony is designed to be purely a military one, as I understand it is, then it is clear that to the army we must go for him and endeavour to entice high charactered non-commissioned officers and well-conducted privates to join, as on the completion of *their first term of service*, I lay, you will perceive, particular emphasis on this, as I am convinced that as a rule, men at the end of their second term of long service, having spent say two-thirds of that service in a tropical climate, are not the men we require, not the men suited to commence life anew in India.

I know that very many of my hearers will dissent from this view, but I speak not only from my own experience, but from that of many, many others, and the result leads me to say at least seven-tenths, of long service men would be quite unfit for colonists in the proper acceptation of the term ; for this reason, I think, that these men and pensioners ; unless they have sufficient capital to employ the labor of others, or to start fairly in some sedentary business to the management of which they might be equal, should most decidedly be discouraged, and this I say with much reluctance, as it enormously increases our difficulties.

We must come face to face with, perhaps, the greatest difficulty in the whole project—how to entice the men we want to come to our colony ; to any one at all conversant with the subject, the difficulty is a very apparent one, but as some of you may not be aware of the extent to which soldiers of *really* good character and physique can obtain remunerative employment in their native land after their first term of service, I may be permitted to say a few words on the subject. When preparing in 1867 a paper on a subject very similar to this, I had occasion to ascertain what became of the great majority of men who left the army comparatively young ; and I was much astonished to find that men who had a high character from their corps, were in good health and willing to work, could almost always obtain employment as lucrative as that which they had just quitted.

Before the Royal Commission appointed to enquire into the recruiting of the Army (in I think 1864), there was ample evidence to show that hundreds of army men were employed upon one great line of railway ; that vacancies were constantly occurring, and that as a rule, the authorities preferred filling them up with army men as the

habits of discipline, order, punctuality, and precision, which they had acquired in the service, made them most valuable as pointsmen, breaksmen, signallers, and guards; while large numbers also take service as railway police and station porters; now what was true of that railway was in a greater or less degree, true of all the lines in Great Britain and Ireland. It also appeared that large numbers of the *same stamp* were in service throughout the country, as porters and care-takers in hundreds of hotels, clubs, houses of business, and public institutions; very many as lodge-keepers, a good number in domestic service, some as clerks, and very many, more specially since the establishment of Regimental Workshops, had returned to their original trades.

What was true in 1864-65 is still more so in 1872; and such being the case the question arises, how can we entice (I use that word most advisedly) the class of men we require, and of whom I have been speaking all along, to forego, or at least to postpone, the common desire so dear to us all, of returning to the land which gave us birth.

This will form a very fitting theme for our coming discussion; but in the meantime, I think, it will be conceded, that we must not only offer fair prospects, in the future, but also immediate substantial advantages, and the following are a few of my ideas on this point.

I think, that to every man buying his discharge, or taking it at the end of his first term of service, and willing to colonize, the Government should find a free grant of some 25 acres of good hill land. But as the State is to have a direct claim upon his military services in case of any emergency, and must derive an indirect profit from his civil services in reclaiming waste lands, cultivating and populating hill districts, &c. &c. &c., it is clear that he must have something more than the mere land; this is where the "shoe commences to pinch."

It is tolerably well argued on all hands, that for the first 15 or 18 months the colonist could derive little, if any, income from his grant; on the contrary, his outlay must be very considerable indeed, seeing that he has to erect his hut, put something into that hut, clear his grant, or a portion of it, put up boundary marks, hedge, ditch and fence to some extent, purchase his farm implements, procure seed, and in fact in whatever calling he may start, he must lay out money in fifty different ways absolutely necessary to commencing life, and must all the time maintain himself and family.

I believe that this difficulty can be met in one, and only one way, and that is by a donation or grant-in-aid from the State; objectionable as this must appear, it is I fear the only alternative, as no man, or at least very few, would possess the requisite capital; and as I am about to show, the grant would not in reality be so very objectionable as it sounds.

The men composing the first class Army Reserve in Great Britain are as a whole of the service, age, and stamp that we require for our colony

and the English Government gives to them 4 pence a day as a kind of retaining fee, in addition to this each man receives a pound (£1) per annum, for the purchase of boots, 'socks,' shirts, &c., &c., &c., he also gets a chako, a tunic, and a pair of trousers every five or seven years, in short taking one thing with another his position in his own country, nay even in his own county and parish, must be considered as worth six pence a day; now surely, if the scheme we have in view should ever commend itself to the approval of Government, and be adopted even as a tentative measure, the advantages offered could not be less than those enjoyed by the Reserve in Great Britain. But you will naturally ask, of what use can four annas a day be to a man settling down with a wife and family on an uncleared grant of mountain land in India? I answer none at all, and therefore instead of this daily pittance amounting to an annuity of (£9) nine pounds, I propose that the soldier should receive or have placed to his credit, a sum representing so many years, purchase of his pay. Now, here the question naturally obtrudes itself, what sum of money would a man be likely to require for setting up in farm or business, &c. &c., and keeping himself and family for a period of say 15 months. I say unhesitatingly that 1000 rupees is the lowest sum upon which a man could commence with any fair prospect of ultimate success. Some of my hearers are no doubt rather taken aback, but as it is I think partly susceptible of proof and as a good deal must hinge on this point, I will state my reasons for arriving at this as the minimum sum; but first of all, as bearing specially upon this part of the subject, let us consider the actual value of a soldier's position during his second term of his service, taking into account not merely his pay, but also the cost and value of his daily ration, his clothing of all kinds, his house rent, medicine and medical attendance and the reduced rate at which he procures malt liquor, tobacco and all articles coming under the head of necessaries. Now, in answer to the questions I circulated here and elsewhere amongst officers and non-commissioned officers, there is a remarkable coincidence of opinion; the lowest value given is 44 rupees and the highest 48. You will therefore allow me to assume the soldier's position as being worth 44 rupees a month, and if we add a wife and one child, it is certainly over 50. I do not think then that I am estimating extravagantly if I put down 50 rupees a month as the sum which a colonist would require for subsistence during the year, or 15 months that must elapse before he obtains any return for his outlay.

We thus account for Rs. 600 at once; and to erect his hut, and do what I previously mentioned, would take nearly every rupee of the remaining 400; he requires thus, according to my notion 1,000 rupees and the only way he can get it, is by the State advancing it to him, either in a lump sum or by instalments subject of course to such conditions and restrictions as might appear necessary; and it might be advisable that he should pay a small rate of interest on it.

I think too that all the necessaries of clothing, &c. &c., which the soldier now gets at such favorable prices, should be available for the military colonist at the same price from the nearest military station.

And lastly I would provide for his medical attendance by placing an able energetic Army Surgeon on the Staff of the colony in conjunction with the Superintendent who should report to Government from time to time on the progress and condition of the colony.

It has been suggested to me that I am placing the military colonist in a much favorable position to start with than any of his civilian brethren, who have been the pioneers of civilization in the Western world ; but this is hardly the case. Surely no *bona fide* colonist ever left his native country with less than £100 in his pocket or its equivalent in stock of some kind. Emigrants I know are daily leaving Great Britain and Ireland, with perhaps not 100 pence in their pockets, but these men go not to colonize in the strict sense of the term, but simply to seek for employment in colonies already formed and flourishing, but even if I have placed the military colonist in a better position, which I doubt, it must be borne in mind that we require a special class of men for a special purpose, and must be prepared to give corresponding advantages.

We have now seen what kind of men we want—where to get them—and how we may possibly tempt them; and the next question is where to put them, and to this I regret that I am only qualified to give a very partial answer. If not necessary, it would I suppose be deemed expedient on many grounds to locate them, as far as possible at elevations of from 4 to 6000 feet above the sea level; and it is obvious that this can only be done in places where Government has waste land at its disposal, and where the State is absolute owner of the soil; on the ranges of hills with which I am best acquainted I believe that both these conditions are obtainable; in the neighbourhood of Ootacamund on the Nilgiri Hills, of Darjeeling on the Sikkim Hills and of Shillong on the Khasia Hills, there is, I am given to understand, an abundance of waste land available, and the altitudes are from 4000 to 7000. No doubt many of my hearers can suggest other sites of equal or perhaps much greater suitability than those I have mentioned; but we do not at first want many, as I think the experiment should be tried on a small scale in a few places, and for a few, say ten years. Let then three sites be selected, two in Bengal and in Madras. Put down 100 men in each with the land donations and advantages I have proposed, and if in 10 years they give not fair promise of success then the scheme can be abandoned, without having done much harm; but if on the other hand they should prove to be successful, let no time be lost in extending them as rapidly and as largely as possible; for it cannot be doubted that a series of prosperous and rapidly increasing colonies would in the hour of internal or external war, prove towers of strength to the Government which had fostered them. We have now, let us suppose actually got our men on to one of the selected sites, and the working of the scheme must commence; and as I am most anxious not to shirk any point which occurs to me, I will take up the one that must first occur to every colonist, namely, the erection of his house, which you will remember, has not been provided for him in my scheme, as it usually is in all others that I have come across. I think that if you let a man choose his own position on his own grant, and

have his house erected according to his own fashion and requirements he will probably be better pleased than if provided with an inconvenient one of a standard pattern in an awkward situation.

But you will naturally object—where is the man to live while his house is being built, and who is to build it for him.

Well, if the colony be started early in December, five months of almost uninterrupted fine weather can be looked for, during which time it would be no great hardship to live in tents; certainly not greater than colonists should be prepared to undergo.

In five months, I believe, that huts sufficiently advanced for occupation could be run up, with of course skilled superintendence and the employment of natives; whose services should afterwards, as far as possible, be dispensed with.

The materials to be massed by Government and issued at cost price. There are, I am well aware, grave objections to this suggestion, but the feeling that his house was his own, would, I am sure, operate beneficially with most men, whereas, living in a Government building implies an increased sense of dependance, and suggests such things as barrack damages, &c., &c.

Now, for the employment of the men. It is not, I think, assuming too much when I say, that of the 100 men  $\frac{3}{4}$ ths or 60 would be laborers, gardeners, breeders, farmers in a word, men who meant in one way or another to derive their living from their land direct, and the remaining 40 would be easily absorbed in the following list of necessary trades, tailors, boot and shoe-makers, carpenters, blacksmiths, joiners, bricklayers, and shop or storekeepers of various kinds. Now, with reference to the question of land, you will remember that I mentioned 20 or 25 acres, as the amount which each man should receive at first starting; and, as I believe, that from 2 to 3 acres is the amount which an able-bodied man can himself cultivate all the year round: You will think, perhaps 25 excessive, but I contemplate that many indeed the great majority, will after some little time keep sheep, oxen, pigs, &c. &c., and will of course, require for their grazing acreage in proportion, besides which a portion of the land should most unquestionably be set apart for growing timber, to meet the manifold requirements of a colony, in fuel, building materials, &c. &c. I also contemplate that so soon as the rising generation of males come to the age of 18 or 20, they too will require land on their own account, and as in any case "A" could (subject to sanction,) lease a portion of his land to "B," I do not think that 25 acres would be even enough, but this part of the question, however, is so very intricate that I can simply give you the outlines as the details would be tedious, and are moreover not necessary to our present purpose. Should the land be of the average quality of the virgin soil on most mountain ranges. I am informed, and my own experience leads me to believe it, that almost anything could be grown between the two altitudes alluded to, certainly most of the cereals and nearly all the



vegetables we are accustomed to, and live stock of all kinds, would undoubtedly thrive well.

I must, on this occasion, pass over some most important points to which I am most anxious to draw attention, and intend to take up in a subsequent lecture. I mean the internal organization, economy, management and administration, the Government supervision and legislation for it, the arrangements for its expansion if successful, and the prospects of civil and military officers settling down around. I now proceed to what after all must be the most important question, the crucial test! Will the scheme in any way pay, or be to any extent self-supporting? This is difficult, most difficult to answer, but the opinion of many clear-headed, intelligent men, whom I have consulted, is, that after the first 18 months, it would, under the conditions I have laid down, succeed. That is to say, that though some men might not succeed so well as others, and some might not succeed at all, yet that, taking man for man, all round, the colony would be ultimately self-supporting.

Whether this assumption be correct or merely visionary, it is, of course, impossible to say without actual experience, but this at least can be easily predicted, that no man would have much chance of success, whose wife could not, and did not in her sphere work to the full as hard as her husband.

She must not only bear and rear children, but she must in every sense of the term be her husband's helpmate; she must cook, sew, and be prepared to do all that hundreds of women are doing for their husbands elsewhere; if not, he has but small chance, and were better back in the barrack square. In order to estimate roughly the cost to the State of three colonies for a period of ten years I have made out the following statement:—

**ROUGH ESTIMATE OF THE COST OF 300 SOLDIERS FOR A PERIOD  
OF 10 YEARS.**

|                                              |     |     |     |                 | Rs.       | A.  | P.  | £       | s.  | d.  |
|----------------------------------------------|-----|-----|-----|-----------------|-----------|-----|-----|---------|-----|-----|
| Approximate cost of one soldier per annum... |     |     |     |                 | 1,000     | ... | ... | 100     | ... | ... |
| Do.                                          | "   | 300 | "   | "               | 300,000   | ... | ... | 30,000  | ... | ... |
| Do.                                          | "   | 300 | "   | for a period of |           |     |     |         |     |     |
| ten years                                    | ... | ... | ... | ...             | 3,000,000 | ... | ... | 300,000 | ... | ... |

*Rough estimate of the cost of 300 Colonists for a period of 10 years.*

|                                                                                                                                    | Rs.              | A.  | P.  | £              | s.  | d.  |
|------------------------------------------------------------------------------------------------------------------------------------|------------------|-----|-----|----------------|-----|-----|
| Cost of conveying 300 men to the Hills at Rs. 50 per head ... ..                                                                   | 15,000           | ... | ... | 1,500          | ... | ... |
| Grant-in-aid of Rs. 1,000 to 300 men... ..                                                                                         | 300,000          | ... | ... | 30,000         | ... | ... |
| Staff allowances for 3 colonies at Rs. 1,000 per mensem each for 10 years ... ..                                                   | 360,000          | ... | ... | 36,000         | ... | ... |
| Contingent allowance for 3 colonies at Rs. 1,000 per mensem each for 10 years ... ..                                               | 360,000          | ... | ... | 36,000         | ... | ... |
| Compassionate fund for 3 Colonies at Rs. 1,000 per mensem each for 10 years, (to be at the disposal of the Superintendents) ... .. | 360,000          | ... | ... | 36,000         | ... | ... |
| Arms, ammunition, accoutrements, clothing for 300 men for 10 years ... ..                                                          | 150,000          | ... | ... | 15,000         | ... | ... |
| Building Government offices and residences at 3 stations ... ..                                                                    | 150,000          | ... | ... | 15,000         | ... | ... |
| <b>TOTAL Rs. ...</b>                                                                                                               | <b>16,95,000</b> | ... | ... | <b>169,500</b> | ... | ... |

3,000,000  
1,695,000

Difference in cost = Rs. 1,305,000 = £130,500.

It is more than probable that I have considerably under-estimated the expense of the Colonies, but then as a set-off it may be noticed that I have taken the cost to Government of a soldier at 1000 rupees per annum, whereas it is I believe all things taken into consideration considerably more. According to my rough estimate you will observe that the saving amounts to Rs. 1,305,000 in 10 years, a small sum certainly, but deserving of consideration in the present day. I feel that I have now exeeded my limits, and have only time to touch upon the question, as to whether it would prove worth the while of the State to incur the outlay I have specified or not.

I am amongst the number of those who think that even with a moderate prospect of success it would, for whether regarded from the political, military, or citizen point of view, these groups of colonies would certainly tend to increase our security of tenure, indeed both of my predecessors have put vividly before you the strategic and sanitary value of them.

After all, the question is, whether it would be worth the while of Government to vote some lacs of rupees towards this very interesting experiment, in preference to erecting palatial barracks in the plains—this I say is a question more for the statesman than the soldier—and yet one who was eminently both appears to me to have decided it in his own mind.

Perhaps of all the great men connected with our Indian Empire,

there has not been one whose recorded opinions have received and deserved wider approval and acceptance, than those of the late Sir Henry Lawrence, with whom we believe it was a favorite and long cherished scheme ; and we cannot but think that had he been spared to fill the exalted position designed for him, one of his earliest efforts would have been to put his theories regarding the Hills into at least partial practice.

In an article on "The Defence of our Empire in the East," published in 1844, he writes—"We would advocate the employment, or the permission to employ themselves, of half the Europeans on the Hills at handicrafts, in agriculture, trades, &c., &c., rations, establishments and barracks in half quantities would thus only be required, and perhaps a portion of the pay of the men so employed would in time be saved.

"Small grants of land, too, should be given on the Hills, or in the Doon to European invalids of good character on terms of Military Service within a certain distance, or on terms of supplying a recruit for 7 or 10 years to a European regiment ; three-fourths of the European children who now die in the Barracks on the plains would live on the Hills, and would recruit our corps with stout healthy lads, such as may be seen in Mr. Mackinnon's school at Mussoorie, instead of the miserable parboiled creatures that we see as drummer boys throughout the Service. *"All that we have mentioned is not only feasible but easy, and we doubt not that all the expense which would be incurred by the change of location and the abandonment of barracks, would be cleared by the several savings, within 7 years."*

On several other occasions he alludes to the same subject in forcible language ; but he is by no means its only powerful advocate, it has engaged the attention of eminent men at different times, in all ranks and professions ; *i. e.*, time will not permit me to proceed further, and it therefore only remains for me to thank you, for the patient hearing you have given me, and to invite the fullest discussion on what I have put forth.

The foregoing lecture, prepared and delivered at the request of Col. Newall, was purely intended as a local and private contribution, and is I fear very unsuitable for publication in a widely circulating Journal ; as however I have been urgently requested to allow it to be published, I can only request indulgence towards its many shortcomings, of which no one can be more cognizant than the author.

Dr. Ambrose's suggestion I have partly endeavoured to meet, and Colonel Maxwell's fears are allayed by the interposition of the words, "subject to such conditions and restrictions as might appear necessary."

F. H.



## II.

## NOTES ON THE USE OF INFANTRY FOR ATTACK.

WHEN a man, among a multitude of roads, has taken the wrong one, and thus lost his way, he will probably hail with gladness the sight of an old fingerpost, which at least shews him where he is, although it may but mark a spot, whence he had started hours ago and to which he had unwittingly retrace his steps. To judge from the various and contradictory opinions, entertained by military writers on the question of the "Tactics of the day or of the future," a not inconsiderable portion of the military public would appear to be in a position somewhat similar to a man who has taken the wrong road, for the professed pioneers of military progress have between them traced a labyrinth of roads—all warranting to lead to tactical salvation—from which there is escape only for the wary.

In making the following remarks on the same subject, I disavow therefore from the first every intention of adding one more to the many lines of advance already traced out, but will try and persuade my readers to return with me to a fingerpost, which—if it does not point straight to the goal by a track easily followed will at least afford a safe starting point and indicate the true direction.

If we analyze the publicly expressed opinions on modern Infantry tactics, we find, that they are all more or less, positively or negatively—pivoted on the system of Prussia, such as it emerged from the fire-ordeal of two great wars. They may in fact be thus classified:

1. Unmitigated—not to say blind—adoption of the Prussian system.
2. Equally unmitigated and prejudiced rejection of the same.
3. A compromise between the two.

To reason with some advantage on either of these alternatives, surely the first essential is a fair knowledge of this same Prussian system which some wish to see adopted and others rejected! I am however constrained to say, and it would not be difficult to prove, that a large portion of the essays and articles written out of Germany on this subject, bear evidence of insufficient acquaintance with the system, which they profess to discuss and criticise.

If readers will bear with me, I will endeavour to sketch, as briefly as possible, the Prussian system of Infantry Tactics, such as it was before the wars of 1866 and 1870—such as it became during those two great campaigns, and such as, in all probability it will be, should another war soon break out. Having done this, I shall then be in a position to venture on a few general remarks as to the applicability or otherwise of these Tactics to the British Army.

The main characteristic, the essence of the Prussian system is the

*Company-column*; to a full comprehension of the former, the study of the latter is essential; I invite the reader to follow and examine with me this famous formation.

During the wars of the first Napoleon, combats for the possession of "localities," *i. e.* villages, woods, &c. had become very common, and it had struck Prussian tacticians as a defect of their Infantry organization, that it permitted no subdivision of strong battalions into smaller and more manageable units for this special kind of warfare. The talented Scharnhorst and others gave their attention to the subject, and a design of the present company-column system was the result. But it would be a mistake to believe that this new system was at once permitted to emerge into the field of practice; on the contrary, military conservatism held it for a long time fast bound by the chains of theory, and it required a new and powerful motive to set it at liberty, and imbue it with vital power. This motive was the improvement of fire-arms and *a fortiori* the invention of the needle-gun. This happened about the year 1846, and in 1847 there appeared a new Prussian Field Exercise which for the first time contained instructions concerning the formation and use of "Company-Columns."

The advantages to be derived from this innovation, which consists in the subdivision of a battalion into four independent units (the four companies of a Prussian battalion), were expected and found to be the following—

1. Rapidity of movements.
2. Adaptability to the ground or cover.
3. The facility with which changes of formation, *viz.* from column to line and *vice versa*, could be effected.
4. The excellent school in the art of manœuvring, which the subdivision of a battalion into four independent parts affords to officers junior to the Battalion Commander.

To a practical test, *i. e.* the test of actual war, company columns were for the first time subjected during the Danish war in 1848 to 1850.

Schleswig Holstein, the country of the two duchies, presents, like many English counties, a perfect network of enclosures, chiefly high banks overgrown with big hedges, and in such ground line formations and battalion columns were equally impracticable, whilst the new company columns were the very thing wanted. But the manœuvres by company columns were in those days managed much more cautiously, not to say pedantically, than during the last wars, and the freedom and independence lately accorded to captains of companies would have been a terrible shock to the feelings of many an officer of the old school. Indeed the more influential of these military conservatives were not satisfied until they had obtained a compromise between the formations of the

past and present, and hence the innovation of half-battalions. General von Steinmetz, it is known, fought his corps exclusively in the latter formation during the war in Bohemia, but this system, though tolerated, was never admitted into the text-books published by authority, nor was it generally popular in the Army; the fact being that half-battalion columns were opposed to Prussian Infantry organization, whilst company columns harmonized with it.

Let us now take one step further and enquire into the working of this new system previous to the two great wars of 1866 and 1870, the former not generally foreseen, but the latter known by all classes in Germany to be inevitable. To learn how the authorities grappled with the impending danger, and what steps they took to prepare their fighting men for the encounter of a warlike foe, and especially by means of what military tactical system they hoped to succeed, cannot be otherwise but interesting to every military student! Nevertheless it is on this point, that strangely erroneous opinions still prevail out of Germany. Colonel Gawler, for instance, says, in his pamphlet, "The British line in the attack, past and future," (and his statement has been repeated by others,) that "the war (1870-71) caught the Germans in their columns, and that they got some startling lessons." By this assertion, the gallant colonel conveys an utterly erroneous impression to his readers, one which half an hour's study of the Prussian Drill-book or a visit to a German parade ground would have at once dispelled. It would indeed be strange, if the nation, which first recognized the value of a breech-loading military fire-arm, would willingly neutralize its marvellous effect, by choosing a formation which prevents or restricts its use! But such is not the case, and the Germans did not, when they could help it, use the column as a fighting formation, *i. e.* the formation in which they actually came into collision with an enemy in position. That there are situations in war, when columns are the only *possible* formation, every soldier knows, and the error to believe that the British Army never fought in columns during the war against Napoleon, has been very properly pointed out in the U. S. Institution of India by Captain Adam. It is evidently the technical expression "company columns," which has led Colonel Gawler and others into error, and there are many good soldiers in the British Army on whom the word "Columns" has an almost irritating effect.

The Prussian Infantry tactics start from the following simple principles, *viz*:—

The means by which Infantry tries to overcome the resistance of an opposing force, is in the first instance *Fire*, in the second "*l'arme blanche*." Of the former there are,

1. The well aimed, searching fire of the individual skirmisher.
2. Volleys fired by word of command, allowing of less accurate aim, but producing greater *moral* effect.
3. "Schnell-feuer," or rapid independent firing of troops in close

and loose-order formations. This latter chiefly, but not exclusively, used in situations of defence.

L'arme blanche is used, *i. e.*, bayonet attacks are made on shaken, or surprised troops, and the bayonet is generally the ally or accessory of fire-tactics. When an opportunity for its use occurs, column formations are not only permissible but preferred, but the highest effects are always supposed to be derivable from a combination of the different sorts of fire and the use of cold steel! This theory would affect the fighting of a battalion in company columns in the following manner. The reader will recollect, I speak here still of tactics taught in peace-time and by regulations, and not of those actually adopted afterwards on the battle fields.

A considerable number of skirmishers—as a rule, however, not more than a third of each company, or the “Schützenzug” formed of the men of the third rank—would by degrees be extended as skirmishers. When unable to approach closer in this formation, first the supports and then one or more *deployed* companies, would move up and take part in the action by firing volleys; whilst, perhaps the remaining company or companies would endeavour to aid the front-attack by a flank-movement. Under favourable circumstances the latter would most likely conclude with a charge, which would certainly, in nine cases out of ten, be executed in column and not in line, the column of attack being respectively 4 or 8 deep, according to the number of companies employed, (the Schützenzüge or skirmisher divisions not included) but such bayonet-attacks excepted, all four companies would when closing with the enemy *fight in line*, with the skirmishers hanging on the flanks and filling up gaps and intervals. That such line-formations cannot have the regularity of the battalion-line of our red book, stands to reason, but they nevertheless represent *bona fide* line—and not column—tactics. A battalion gets a certain problem to solve, each company takes its share of the task, and contributes to the general solution according to circumstances and at the discretion of its captain—the object, *which is common to all*, being clearly defined, but a choice of means left open to the commander of each company column.

Colonel Gawler, not content with his assertion already quoted, goes on to say: “It was too late (for the Germans) to practise the line, or to get their skirmishers better in hand, so with admirable good sense they adopted the skirmisher swarm.” Both the praise and the criticism contained in this sentence is strangely out of place; for an advance in line has long been as familiar to the German as to the English soldier; and as to the new swarm-tactics, they were—as General Thesiger correctly says in his lecture held at the Soldiers’ Institute, Fort William—the inspiration of the moment, forced upon the German Infantry, by the terrible effect of the enemy’s fire.” If German General and Field Officers have read Colonel Gawler’s remarks, they must have been astonished, for with a large number of them an advance in line, bands playing and colours flying, was as cherished a hobby as with any British Officer!



The practice of "pure tactics," or in other words, the ordinary drill of a Prussian battalion on the parade-ground differed little indeed from an English drill parade in the old, time-honored style, but as soon as "applied tactics" were practised, *i. e.*, as soon as the battalions manœuvred with regard to ground, a great difference became apparent. The flexible company column system then asserted its superiority and imparted that manœuvring skill, and encouraged that readiness to act independently in Prussian officers, which proved so invaluable to them under the new conditions of modern warfare. But, let it be repeated again and again, *these Company Columns are not antagonistic to line-tactics!* If, instead of coming into collision with the enemy, line and skirmishers combined, during the last war, they almost exclusively resolved themselves into a skirmisher swarm, this was due to causes, with which I shall deal presently, but in the meantime I must draw attention to the simple fact, *that the majority of the eminent tacticians Germany boasts of, refuse to regard the skirmisher swarm as the only possible formation for attack.*

Were it otherwise, how is it to be explained, that in spite of the ridicule cast on the established system of Prussian Infantry tactics, by the author of the "Tactical Retrospect," and of "The Prussian Infantry in 1869," and notwithstanding von Boguslawski's clever "Tactical Deductions,"—how is it, I ask, that this alleged *absolute* system is still in force, and has been retained almost unaltered in the new Prussian Drill Book *published since the war?*

Again, how is it, that this new guide of the German armies and the Royal "Cabinet order" of the 19th March 1873, which ushered it into existence, treats "open lines," "swarm tactics," etc., with absolute silence?

It is a glorious attribute of youth, to make light of difficulties and despise the dictates of caution, and nearly all writers who have given their opinions to the world on the tactics witnessed by them in Bohemia and France, were young Officers of comparatively humble rank. They were gifted, highly instructed soldiers certainly, but still young men, whose writings bear the stamp of an enthusiasm, which cannot always be accepted as a safe guide. Hitherto these young tacticians have had the ear of the British military public almost exclusively to themselves, and it cannot be denied, that they have done good with their trumpet-notes, though they have alarmed some soldiers of the old school out of all propriety.

Lately more sober voices have made themselves heard, and far more carefully reasoned opinions have been published, among which Major von Scherff's tactical studies, lately translated into English by Colonel Lumley Graham, deserve to be prominently mentioned. I cannot help quoting at once an observation of this thoughtful writer in allusion to one of the above mentioned publications, which is peculiarly appropriate here: "We saw, for instance, says he, how after 1866, a man,

with an otherwise clear and observing mind, and one which extracted much that was true, went so far in his "Retrospect" as to assert, with many believers, that the right course for Infantry to follow was to fight in future "like a horde of savages!"

Von Scherff, far from being elated at the great success gained by the arms of his countrymen, lays bare with an unsparing hand the errors committed, and subjects them to the most searching analysis. It could not therefore escape him, that there was more than one cause in operation productive of that dangerous disorder which followed the frequent intermixture of troops belonging to different tactical units, which was so characteristic a type of modern German warfare. It is generally accepted as a fact—firmly established and supposed to be indisputable—that this disorder was the effect of the destructive fire from breech-loaders, the consequent tendency to expand in the direction of the flanks, and of the difficulty, amounting to an impossibility, of relieving or withdrawing troops, who had once come into collision with the enemy. A host of military essayists have been harping on this string, and on this string alone; indeed the whole "order in disorder" school is based on this one argument, which would be unassailable but for the co-existence of others.

I will mention some of these additional causes, which have led to that extemporized irregular method of attack, generally known as the "order in disorder" system, quoting here and there Major von Scherff's own words:

1. "The colossal technical alterations which the present age has brought forth, had to be tried practically *for the first time*, and the experience which was gained step by step during the war, was not available at the beginning of the campaign.

2. The nature of the battle-fields, frequently covered with extensive woods, forests, vineyards, etc., made it difficult to preserve the tactical cohesion of troops, and would have similarly affected armies a century ago, had they chosen a similar arena of battle.

3. *Too great an eagerness prevailed on the part of subordinate general and other officers in the German armies to bring their forces into contact with the enemy.* "Great bodies of troops, says Von Scherff, trickled away into action before completing their march into line of battle; detachments, standing or fighting side by side, made their attacks independently of one another instead of in combination; comparatively weak bodies (advance-guards for instance) assumed an extension of front far more than commensurate with their strength; and separate battalions, companies, even at last divisions (Züge)\* breaking away here and there from their "stem," and seeking each its own way, doubled in, attacked, made turning movements, pursued, each 'on its

---

\* One division or "Zug" = one-third of a Company or about 80 men.

own hook,' until utterly breathless and with ammunition expended, they found themselves at the opposite end of the battle-field."

Strange that such a state of things, as that here described, should have exercised so much fascination over the many who now recommend imitation !

Surely, it was no wonder, that "disorder" (with or without an admixture of the element of order) should have been rampant in the German armies, when pitched battles were fought by accident as it were, and against the will and intention of the Commanders of armies.

No wonder that brigades, divisions and corps got intermixed, when as at Spicheren, we see a single division (with another within hail), advance to the attack of a French corps d'armee in a formidable position, and this with a front equal to that of an enemy three times as strong. Of course reinforcements were soon urgently required, and arriving as they did from different directions by dribblets, had to be doubled in, where most wanted, irrespective of orders of battle or organic connexion.

If success has not blinded German tacticians to the perception of such grave errors, why should it have that fatal effect on us ? If the German leaders—as the war progressed—have striven with all their might, and not unsuccessfully, to remedy these faults, why do English advocates of the "order in disorder school" not select the battles and actions fought later on, as subjects of study—and as patterns if they like—in preference to those, in which confessedly, true principles have been recklessly violated ? If they would but calmly and honestly search for the real causes of German success, they would find much worthy of imitation ; but many, very many I am afraid, have taken the shadow for the substance !

In answer to the question, what system of Infantry tactics are the Germans likely to bring into the field, should another war soon break out ? I shall confine myself entirely to quotations from Major Von Scherff's "Studies," which will speak for themselves. It must be remembered, that this author is an officer in Field Marshal von Moltke's Staff, and not likely to express opinions which are not shared by some of the most distinguished and influential, soldiers in Prussia and Germany. The respect and high praise also, with which Von Scherff's views have been received by the military press in that country are a guarantee, that they are not merely the isolated and crotchety opinions of a military philosopher. Step by step von Scherff offers to the reader the "why and because" for each opinion expressed, and only after the most logical reasoning does he venture to raise these opinions to the height of principles. Space unfortunately restricts my efforts to quotations from the author's final conclusions, and I am compelled to leave alone the arguments which led to them ; I also must necessarily confine myself to "Infantry Attacks" only.

"Every attack—says Von Scherff—has to go through three stages :

The period of preparation.

The moment of accomplishment, and of the greatest strain on the faculties, and

The period of reaction and of recovery."

Dealing with every one of these stages one after the other, the author, sums up as follows :

*A. The preparatory Stage.*

1. "In order to prepare the way effectively, it is necessary to bring up your skirmishing line to between 200 and 400 paces of the enemy's position, and to overwhelm with a concentrated and uninterrupted fire, the particular part of it on which you intend to direct your assault."

2. "In order to do this, the attacking force should be divided into an *advance* and a *main body*."

3. "These two bodies should be in such proportion to one another that from one-fourth to one-half of the total strength should be allotted to the *advance*."

4. "The *advance* is again divided into skirmishers and supports, the former bringing as many rifles into play, as the nature of the ground will allow; the latter, being intended to make good the losses of the former, must, on open ground, be of equal strength to them, but under favourable circumstances, need only be half as strong."

5. "The better the cover afforded by the ground, the greater may be the extension of the skirmishers during their advance. The limits to be assigned to this extension depend on the necessity which exists of ensuring unity of command throughout the attack, and of being able to concentrate the skirmishers' fire upon one point. The front for a battalion of 1000 men will range between 300 and 500 paces."

6. "For the sake of unity of command, it will be advisable for every battalion taking part in the attack, to form its line of skirmishers with one company\* and its supports with another."

7. "The skirmishers should advance in one body from the extreme range of the Artillery fire bearing upon them as far as the extreme *effective* range of the enemy's infantry. The company which furnishes them should always be extended in one line before it becomes a target for the enemy's fire, even if at first it had formed some supports. This advance from 1200 to 800, if possible to 600 paces of the enemy, takes place as long as may be without opening fire, individual firing by word of command being only allowed when you can no longer dispense with its ani-

---

\* One company = one-fourth of the Battalion.

mating effect, or when special reasons for it arise (such as the necessity of drawing in advanced parties of the enemy &c.)” As soon as the line of skirmishers reaches the zone of loss from *aimed Infantry fire*, it changes its mode of progression to that of the alternate *rushing forward* and *lying down* of separate fractions. As far as it is possible, (the nature of the ground and the advantage taken of particularly favourable moments forming exceptions) these rushes are made by whole divisions\* and not over more than from fifty to eighty paces at a time ; whether in succession from a flank or chequerwise is immaterial. Each time the divisions which are halted and lying down, cover by a steady well directed fire the advance of the others. Only when the skirmishers have advanced to within the most effective range of the enemy say from 400 to 200 paces will an unmistakable command or signal be given, upon which a *rapid independent fire*, as much concentrated, as possible upon a point previously indicated, will be opened and will be maintained until the moment of the actual assault.”

8. “ The distance of the supports from the skirmishers and their mode of advance, will be regulated as provided for the portion of the attacking force, which remains in close order (see further on, the *execution of the attack*.)”

9. “ The skirmishers will be reinforced by the supports as far as practicable, by doubling in separate sections (such as “divisions” or “groups”) between separate sections of the front line ; but the details of execution will always be subordinate to producing the best possible effect upon the enemy.”

### B. The Stage of Execution.

1. “ Every independent body of troops intended to take part in an attack, should have a distinct objective assigned to it by superior authority and should direct its efforts against this point, without cessation with its whole strength, and in the most direct way.”

2. “ The troops must be deployed for the attack, as soon as they come within reach of the enemy’s Artillery. (As already stated) they should be divided into main and advanced body, the former keeping within 500 paces of the advanced skirmishers in open ground and under favorable circumstances nearer to them.”

3. “ The supports of the advanced skirmishers should, as soon as it becomes a mark for the enemy’s guns, assume by degrees a more and more extended formation behind the skirmishers, first deploying from column into line, then spreading out so as to leave intervals between the divisions, and finally making each division expand into an *open line*. The Captain of the support will use his own discretion as to the re-inforcement of the skirmishers, both with regard to time, place and

---

A German division equal one-third of a Company or about 80 men.

amount, establishing himself as close as possible behind them, with whatever parts of his company remain in hand, and finally throwing himself with these remnants into the line of skirmishers, to take part in the heavy firing, when the main body has approached to within 80 or 100 paces."

4. "The main body gets over the ground from first coming into action, until reaching the zone of *unaimed* Infantry fire, that is, until within 1500 or 1200 paces of the enemy, in little columns (either Half Battalion or company), if the attention of the defenders Artillery is so much occupied by that of the assailant or by his advanced skirmishers that it cannot direct its fire on the main body."

5. "From this point onwards when either the mass attracts the fire of the enemy's guns or begins to catch his rifle balls, it should resolve itself into company columns, with intervals of from 40 to 80 paces, in which formation as near an approach as possible should be made to the advanced Skirmishers, say to within from 600 to 400 paces of them. During the advance each company may, at the discretion of its Captain, either deploy, or else form *open line* from division columns. Other formations, such as, for instance, the deployment of whole or half Battalions, the *open line* from a deployed Company, the advance by sections or by files (fours) from a flank of divisions, do not seem advisable, because they all more or less hamper the forward movement and interfere with the influence of the Officers, without sensibly diminishing the losses."

6. "As soon as the main body has arrived within about 50 paces of the line of skirmishers, now reinforced by the whole of the supports the Commanding Officer gives the signal for the assault, which will be made by both advanced and main body together in double time (from 120 to 150 paces in the minute) whilst the drums beat the "Storm March" and the bugles constantly repeat the call, as lively a fire as possible being at the same time kept up by the advanced troops during the movement, which continues thus to within about 20 or 30 paces of the enemy, then terminates in a rush of full speed with a cheer, and the position is carried. The advanced troops will generally make it their business, to envelop the point of entry, whilst the main body converges upon it and breaks in."

7. "The troops which force the position, must aim at gaining the further border of it, so as to be able from thence to pursue the retreating enemy with their fire, and every portion of the attacking force will try to do this without regard to their original sub-division into advanced and main body. It will not signify, if at this stage portions of the main body companies pass beyond or mingle with fractions of the advanced companies, which may yet be engaged with the enemy within the limits of the post which has been forced. An immediate rush forward beyond the border of the position is altogether inadmissible. The assailant will do much better, if he at once prepares the point

which he has captured for defence. However much every subordinate Officer should endeavour to keep his people together all should yet be prepared, and the men should be ready and habituated to perform any task which the necessities of the attack may bring forth at a moment's notice with whatever force may be at hand."

8. "As soon as the success of the attack may be considered complete, every Officer must do his utmost to restore order as quickly as possible in his immediate neighbourhood and by degrees throughout the whole mass in spite of the over excitement or reaction, which will probably prevail."

*C. The third stage of the Attack ; General Remarks.*

"We hardly require theoretical argument or graphic description to prove, that troops which have made an attack, as it necessarily must be made, in the manner above described, will have expended almost all their power for a certain time and require a period of repose, which should at least, last until the disorder, which as we have already asserted and still confidently maintain is inseparable from such operations, has been to some extent remedied. This third stage has at all times been an extremely dangerous period for the assailant, a period in which the laurels which have just been won at the price of blood, have often been again torn from the victor by a counter attack of the enemy. Hence it has always been the aim and the task of the commander when making his general dispositions for this moment of depression, and in examining this part of the question, we come to this difficult point, the sub-division of the force into separate *lines of battle*."

&c.

&c.

&c.

"Lines of battle, as we have hitherto viewed them, may be looked upon as the *defensive* supplement to the *attack*, an element which cannot be dispensed with, as long as the *Defence* contains within itself any *offensive* properties."

&c.

&c.

&c

"As soon as a body of troops on the offensive is large enough to be divided into separate lines of battle, it will be well not to bind it any longer by any fixed drill regulations. These regulations include the question of command which requires to be left more *open* that is to be decided more according to circumstances, the larger the forces with which we have to deal. In the present state of Tactics, drill regulations cannot be allowed to rule any larger body than a regiment.\* Whether the Brigade should be formed with its Regiments side by side, or one behind the other, is the Brigadier's business, whose decision is thus the first called for in a matter affecting the question of lines of battle which we are now discussing. In proportion as the body of troops increases in size, and as at the same time more regard has to be paid to the com-

---

\* A Regiment of 3 Battalions is here spoken of.

bined action of the other arms, the latitude allowed to the commander will also necessarily increase, which, however, does not do away with the need of fixed regulations respecting the original formation of these masses. ("Rendez-vous formation.") The following principles will be sufficient to regulate their general employment in the attack with reference to its third stage now discussed."

1. "An attacking force of more than two or three Battalions, must needs be formed in more than one line of battle, so as to be able, to meet a counter attack of the enemy, the possibility of which must always be kept in view."

2. "A second line of battle becomes necessary, when the front of attack is so wide, that a charge made against it, cannot be met directly by the wings of the assailing force, namely, if the front exceeds the range of a rifle ball, say from 800 to 1200 paces. A third line of battle is requisite to help the advanced troops to tide over the weak moment of reaction, through which soldiers who have met with a stubborn resistance, will naturally always pass, and of which the defender is likely to take advantage for making a counter attack on the flank of the stormers as they advance, or on the position which they have just carried. Therefore whilst a second line of battle is only necessary under certain conditions, a third line can never well be dispensed with; that is to say we shall always find it advisable, to keep back a certain portion of the first line, to follow after the fashion of a "*third line*."

3. "From a quarter to one-third of the total force, will usually be, sufficient for a third line, and the second may be much weaker. The former will meet the enemy's counter-strokes by acting on his flanks, and, according to circumstances, will serve as an "outer" Reserve, after the position has been carried, or will undertake the pursuit; the latter will fill up accidental gaps in the front line, oppose a purely defensive action to the enemy's attempts to break through, or clear out his stragglers after the position is won."

4. "The usual distance of the second line of battle from the main body of the first line, will be 300 paces, so that it may not share the losses of the latter, whilst the third line will follow at the distance of from 800 to 500 paces, so regulated, that it may be at hand when its support is required. Whilst the troops composing the second line of battle, will in accordance with the duties required of them, be disposed so as to cover the intervals of the first line, those of the third line will be most advantageously posted on the flanks, with a view to the part assigned to them, which, however, does not prevent them from being at first kept together in the centre, so as to be available for use on either side. But anyhow they must be drawn to a flank in the extreme case of having to cover the retreat of the first line after its repulse."

5. "The combined action of the second and third lines of battle with the first, will depend too much on circumstances to become the



subject of regulation. It will generally be convenient to place the corps in second line, under the same command as those in front of them in first line, whilst the third line had better form an independent command; but the commander of the whole force must have full discretion in the matter. If this arrangement is made, we cannot avoid, in a second line at least, breaking up the tactical unity of the Battalion into two independent Half-battalions."

Thus far Major von Scherff on Infantry attacks! With equal clearness and precision does he shew how to conduct a Defence or rather a "Defensive Offensive," as he terms it, bearing in mind, that "all defensive action which aims at a decisive result, victory in fact, is composed of two elements: *resistance* and *counter-attack*."

It is, however, not my intention, to discuss defensive tactics on this occasion, for on this point opinions are fortunately more unanimous than those prevailing with reference to attacks, and few are the modifications required in the well-known defensive tactics of the "Iron Duke."

The reader will have noticed, that Major von Scherff's precepts for attack do not exclude close-order formations, neither lines nor columns, but gives full latitude to an employment of either according to the stage of attack, the nature of the ground and other circumstances. It is also evident, that, although he taboos close-order formations to his "advanced body," he wishes the "main body" to preserve that order to the last,\* and whilst admitting that, when carrying a position, the "advanced" and "main bodies" may ultimately become intermingled, he positively asserts, that at this stage of the attack, it does not signify. One of the best antidotes against this evil, if evil it be, will be the preservation of unity of command with reference to depth, as much as possible.

After what has been said, there remain now the following points to be considered, and I invite the reader to give them his careful attention :—

1. Is there anything in Major v Scherff's precepts subversive of the true principles of war?
2. If not, are they in any way opposed to the organization of the British Army or to the character of the British soldier, and
3. if this question also is to be answered in the negative, then how would these precepts affect our present Drill system, and the method of training of our Infantry soldiers?

My presuming that question 1 and 2 will have to be answered negatively, indicates in what direction my own convictions run; I have

---

\* Major v Scherff's ipsissima verba with reference to *open lines* are: "We do not esteem the morally tranquillising effect of this formation so little, as to wish to forbid its being used on the Commander's own responsibility, though we consider it specially applicable to the supports, which are intended afterwards to skirmish, but not suited to the main body, whose massive force alone will tell. In peace exercises, as least, we should not willingly recommend it for use to the latter."

certainly always thought, that there was more need of weeding our Drill Regulations of useless and pedantic exercises, than of any radical change in the system.

The formations from which to choose when we move our Infantry to the attack should now-a-days be the line of Skirmishers more or less dense,\* the ordinary deployed line, the open line (or in other words, the line with intervals between files) and columns. With the exception of the open line our Drill-book offers us already every one of these formations, but—as Battalion columns are unmanageable under fire, unless very much favoured by the ground, we want a smaller Column to be admitted, say the Half-Battalion Column, for Company columns would at present not fit well into the frame-work of our Regimental organization. As both the open line and the half battalion column have already had a trial in the army, we may hope to see them soon enrolled among the other authorized formations, and then we shall have a variety of tools—so to speak to choose from, for any tactical job we may have to execute. True, the proper selection will much depend on a thorough acquaintance with tactical principles on the part of the Officers, but surely it is not too much to expect this knowledge to spread from year to year, in these days of staff Colleges and Garrison Instructors?

Among the various controversial productions on the subject of modern Infantry Tactics, and particularly among those which have appeared in this country, very few are properly supported by argument. Some opinion is proclaimed as a principle and the military public are asked to accept it as such. There is, however, one notable exception, of which I should like to say a few words. I allude to the lecture delivered by Major General the Honorable F. Thesiger, Adjutant General of the Army, in which he protests strongly against the unmitigated skirmisher swarm-tactics and the whole of the “order in disorder school,” but more particularly against the reckless abandonment of the historical “thin red line.”† This protest I consider to have been timely and fully justified, for wild notions had commenced floating about in military circles and soldiers were treated to strange sights at Camps of Instruction. Certain of the gallant General’s observations have led many readers to regard him as the Champion of the old two deep line pure and simple, and certainly remarks, such as the one with which the lecture concludes: “Last, but not least, they (*viz.* the changes advocated) will enable us to retain, in spite of all the changes in modern warfare, that two deep line formation *for attack* which the British Army has always looked upon as peculiarly its own” would warrant such an impression. But so many are the concessions made by the gallant General in the course of his lecture, that, after all, he himself becomes a reformer who advocates changes which seriously modify the old line-tactics. With these proposed changes no one can quarrel, at least as far as principles go.

---

\* About 3 paces for each file as a general rule.

† Vide Journal of the Indian United Service Institution for May 1873.

Some of the tactical formations which General Thesiger has sketched out, I cannot but consider as too complicated to work well under fire, but his *modified* lines, his admission of intermediate column, formations and of the open line even, bring him rather close to the stand point from which I have started.

General's Thesiger's subdivision of military exercises into "Drill" and "Manœuvres" is a distinction which has become necessary to modern systems of training and has been alluded to by me—following von Boguslawski as "*pure*" and "*applied*" tactics and with the remark, that "careful and accurate drill during peace-time, is the best preparation for celerity and steadiness in war" I agree with all my heart, the more so as this is a tenet which the greatest tacticians of the age have made their own.

And now for a few words on the training of our soldiers individually and in peace-time. There is one great lesson taught by the late war, which, of all others, we ought to lay to heart, namely the fact, that the unrivalled successes of the German armies have sprung mainly from that care with which for years the German soldier has been trained for individual action and self reliance. Errors and false tactics were neutralized and even turned to advantage by this individual intelligence and the skill with which it was utilized by the subordinate leaders. This is an element which we must admit into the British army; the British soldier has intelligence enough, and—let it be remembered—he serves much longer than the German. Mere want of education of the mass is no obstacle, if you leaven that mass, as it were, with intelligence, by instructing the more capable individuals. If but one-fourth of each company be well instructed, they are sure to exert a wonderful influence on the rest, *i. e.* the educated part always carries the uneducated one with it. We should be neither disheartened therefore, nor turned aside from the good work of individual instruction, by the presence of raw and ignorant rustics, but remember that want of education is not synonymous with stupidity.

Let every Recruit, for instance, from the beginning of his soldier's career, have explained to him the "why and wherefore," of everything he is made to learn. This becomes more imperatively necessary when he takes his part in "applied tactics" and is taught skirmishing, outpost-duties, etc. At Camps of Exercise especially, the nature of every manœuvre should be explained to all ranks, otherwise they cannot be expected to take an interest in them.

"It must be admitted—says von Scherff—that the new order of things has raised, to no inconsiderable extent, the demands which must be made, as well upon the soldier individually, as upon a body of troops collectively, and upon its leaders up to the very highest grade" and this remarks applies equally to the armies of all civilized nations.

I do not know, whether I have made good my offer, to act as a humble finger post, helping a reader here and a reader there to a smother

road by which a clearer knowledge of the question of the day may be reached. To many these lines will offer nothing new, but for them they were not written ; at all events I have honestly tried to do some little good and having strong convictions on the subject I have discussed, I do not apologize for having candidly, and perhaps boldly, expressed them.

A. SCHMID, *Major*.

## III.

## THE 14TH BENGAL LANCERS.

## "MURRAY'S JAT HORSE."

*Their Advent in Hindustan, Traditional Customs, and Field Services.*

THE Jats of the 'Dooab,' of which the 14th Bengal Lancers is composed, also the Jat Sikhs of the Punjab, are of one race, and of Scythic origin, who boast of having entered Hindoostan from Central Asia, through the Bolan Pass long prior to the Christian Era.

2. So late as 1720 the Jats of the 'Dooab' were a powerful race, appearing frequently in the war arena, under their then noted leaders, Soorujmull and Chooramun of Bhurtpore; Delhi and Gwalior were at one time in their possession, and in the wars of that period, between the Maharattas and the Kings of Delhi, the Jats invariably took a prominent part.

3. The capture of Bhurtpore and Hattrass by the British about the year 1826, reduced them to mere tributaries, and ever since then they had devoted themselves to agriculture, in which they excel.

4. Although, of the same origin, and frequently intermarrying with Jat Sikhs, the Jats of the Dooab have little sympathy with them, which was clearly shown during the Punjab Campaign, and even when located in the same station with Sikhs, there is scarcely any social intercourse between them, which may, perhaps, be attributed to the fact, that the Jats smoke tobacco, which to the Sikhs is an abomination, and the relinquishing of or indulgence in this drug, forms an important item in the marriage contracts of the Jat of the Dooab and his Jat Sikh confreere.

5. The Jats though Hindoos, and venerating the Ganges, Jumna and some deities of the Hindoo Mythology, are singularly free from caste prejudices, cooking and eating in a body anywhere without religious ceremonies; this has caused them to be looked down upon by the Brahminical classes, and may account for their not having been found in the ranks of the Bengal Army, previous to the Mutiny of 1857.

6. An important characteristic is their intense undisguised hatred for Mahomedans, who as cordially detest them. This mutual dislike is the growth of centuries, and the events of the Mutiny of 1857, tended if possible to intensify it; in short, it may be said, that the Jats are an unpopular race, whose loyalty to the British Government may be attributed to the conviction, that under no other sway would they enjoy so much toleration and prosperity.

7. The religion of the Jat admits of a plurality of wives, and more especially so, if the earlier marriage prove unfruitful; they may also cohabit with, though they cannot marry a brother's widow, a custom

that has of late years become universal amongst the wealthier Jats, with a view of perpetuating the name of their deceased relative. The rites of betrothal "Luggun," and marriage "Shadee," can only be performed between November and June; the former takes place when the male is 16 years of age, and the female from 5 to 9. On this occasion the father of the girl deputes the village barber, and a Brahmin, who is well known to, or has been brought up in the family, to visit, and report upon the qualifications of the boy mentally and physically, whom he wishes to make his son-in-law. This custom, strange to say, is never observed in the case of the girl, whom if betrothed must be taken with all shortcomings. When the girl reaches a marriageable age from 13 to 15, her father sends a yellow colored note to the youth's parents, and its acceptance by them is a sufficient guarantee that there is still no hindrance to the marriage taking place. The girl's father gives "Dueja" or "Dehaje," *i. e.*, a marriage portion to his daughter according to his means, which is often settled upon herself by a traditional custom called in the vernacular "Stridhun," but no gifts of any kind are presented by the boys' parents except "Nikahana" or marriage fees, that are bestowed upon the barber and Brahmin, who conducted the marriage negotiations. On the wedding day the young couples' clothes are knotted together by the Padri or Brahmin, who after exacting solemn promises of kindness from the man, and faithfulness from the woman, declares them man and wife. The bride is then conducted to her new home, amidst rejoicings, the scattering of gold, silver and copper coins according to the social position of the girls' parents, and the deafening melody of a Native band, that boasted superiority of the Asiatic over his English ruler.

8. On the birth of a Jat, the mother and child are placed in a house quite separate from the usual abode, and are seen by no one, but the "Dhai" or nurse until the sixth day, which is styled the "Chetti." When the eyes of the mother and infant are painted with a preparation of (Kajil) lamp-black. Dinners are given to relatives, and at the expiration of ten days the usual ablution or purifying of both is gone through. New clothes are put on by both parents and the child, the mother then returns to her own home and ordinary occupations. This is also the day generally selected for giving the child a name, which is pronounced by the family Brahmin, after due consultation with the stars.

9. At the near approach of dissolution the dying Jat of both sexes, is taken off the bed, placed upon the ground upon a spot freshly leaped over (*i. e.*) plastered with cowdung, and there left until dead. Just at the point of death, the sick person has a decoction of Ganges' water, gold filings, pearl ditto and toolsie or southern wood, poured down the throat, and is then pronounced fit to participate in the "Deethbundi of Lutchmee Newaz," (*i. e.*) the enchantments of the Hindoo paradise. When dead, the body is wrapped round with cloths, whose texture denotes the rank of the deceased (Cashmere and Delhi shawls being often used), and conveyed to the funeral pile called "Kanti," by relatives, friends and domestics, the number of whom is indicative of the deceased's rank or popularity. On reaching the place the body is stripped naked

and its shrouds, be they ever so valuable, given to the sweeper or "bhungee;" the corpse is then laid upon the pile, and if necessary, anointed with ghee (stout people are never greased)—when the nearest male relative ignites it with his right hand. He remains by the body until it is nearly consumed, and then with his stick breaks the skull, into which he pours one to two seers of ghee. The mourning or "Kiria Kurm," usually last 13 days, during which time the next of kin or heir keeps his head and face closely shaven, but should the deceased, being a soldier, die while serving with his regiment in Cantonments, his relatives deem three days to be ample for the performance of all funeral ceremonies, and very rarely ask to be excused from duty for a longer period.

10. The Jats mess together, and eat flesh of all kinds, beef only excepted; one person generally cooks for a household. The Jats are not prohibited from partaking of stimulants or drugs, but indulge most freely in the use of tobacco.

11. The wealthier classes dress in superfine cloth, and are very partial to the colour red. Their favorite weapons are the sword, spear and shield, and their most popular amusements, wrestling, long and high jumping.

12. Physically the Jats are a remarkably fine race, and being purely agriculturists, they are proverbially free from many vices peculiar to inhabitants of cities. As soldiers, they are brave, hardy and obedient, while their freedom from caste prejudices is greatly in their favor, and would be even more so, if they were required for foreign service.

13. The Jat has certainly no decided turn for literature, though some have acquired a good knowledge of the Persian character, in which all their regimental accounts are written. They do not patronize the Regimental School, but there is every reason to hope that when this institution is reorganised and conducted upon better principles, the men will attend it more regularly.

14. While amenable to discipline, the Jats are a remarkably independent race, peculiarly sensitive of abuse, and unless treated with kindness and consideration, are likely to relinquish a service, entered much more from a love of soldiering than as a means of gaining a livelihood. They are a thrifty, industrious people, always possessed of sufficient land to give them occupation and subsistence ample for their wants.

15. The late Commander-in-Chief, Lord Strathnairn, wished to introduce Jats into our Native Army generally, and consulted Colonel Murray on the subject, who predicted that the scheme must prove a failure, and so it was; for scarce one is now to be found in many corps, that enlisted largely; the fact being that they were sent to serve under Mahomedan and Brahmin commissioned and non-commissioned officers who looked upon, and treated them as aliens and interlopers.

16. The Jats of the 14th Bengal Lancers are recruited chiefly

from the Allygurh, Sydepore and Rohtuck districts, the inhabitants of which have ever since the Sepoy Mutiny of 1857, shown a decided partiality for the Army. The physique and soldierly qualities of the Jat, like most of his Hindoo brethren, depends very much upon the district from which he is recruited, and first upon the list stands the "Bhagur," (*i. e.*) Bekaneer or Western Jat, who is essentially an equestrian, and from childhood may be found, scouring the vast sandy plains of the west, mounted upon his far-famed Bekaneer mare; next is the Rohtuck or Hurrianah Jat of stalwart build, also a fearless horseman; and lastly, the Sydepore and Allygurh Jats. The inhabitants of the first two districts are beyond all comparison the finest soldiers, indeed, there is as much difference physically between a Western Jat and Allygurh one, as there is between a saintly "Akalee" or Sikh scribe, and one of Runjeet Sing's renowned "Kalsah" warriors.

17. The Jat, until well acquainted, is very reserved, he is at all times undemonstrative, but never morose. He is fond of his profession as a soldier, giving his whole attention to parade work, and in this particular is the most satisfactory Native soldier to be met with, while his physical qualities and powers of endurance were very fairly tested during the Mutiny of 1857, and in the subsequent Bhootan campaign of 1864-65.

#### FIELD SERVICES.

18. The Field service of this regiment may be said to have commenced on the 24th August 1857, when 70 Jats who subsequently formed the nucleus of the present 14th Bengal Lancers, behaved most gallantly in an attack on the garden of one Maun Sing near Allygurh.

19. In this engagement they were led by Captain Murray, who was assisted by Mr. Hennessy, a volunteer, and an influential Jat Thakoor Khurruck Sing; all three were wounded, Captain Murray having killed the rebel leader, a fanatical Gazeer, in a hand to hand conflict.

20. Captain Murray was thanked by Government for his eminent services, and recommended for the Victoria Cross by Major Montgomery, the commander of the Expedition; Mr. Hennessy received the commission of a Local Lieutenant, and was appointed Adjutant of the Jats, while the Jat Thakoor Khurruck Sing was appointed a Ressaldar with the 2nd Class Order of British India and the title of Bahadoor.

21. As quickly as they could be raised, the Jats were employed in restoring order in the Allygurh district, and at this early period even, a troop under Lieutenant Hennessy did good service with Major General Seaton's Column at Mynpooree.

22. On the 11th March 1858, while watching that portion of the Rohilkund rebel army opposite "Kutchla Ghat" on the Ganges, Captain Murray with 200 sabres defeated 600 strong of the old Irregular Cavalry, who had come across the river to attack him, and held the whole rebel force in check until the arrival of Brigadier General Penny's column.



23. In this fight Lieutenant Hennessy was severely wounded. Captain Murray, Lieutenant Hennessy, and all the men engaged in this spirited affair, received the thanks of the Governor General in Council. G. G. O. No. 38 of 1858.

24. From March to July 1858, the regiment successfully guarded the Ganges' ghats in the Allygurh and Etah districts, preventing the Rohileund rebels from crossing into the Dooab.

25. In September 1858, the regiment was placed at the disposal of the Commander-in-Chief, joined Colonel Kelly's column in the Auzim-gurh district, and served with it up to February 1859. When they marched to Goruckpore and again joined a column under the command of Colonel Kelly, C. B., and with it took part in the action of Ruttonpore near Bootwul, when the Begum's Army under Nana Saheb and Bala Rao were signally defeated. Major Murray received special thanks for the able manner in which he commanded the Jat regiment, Captain Chalmers, Lieutenant Hennessy, and Doctor McKellar having also been favorably mentioned. G. G. O. 21st April 1860. The 4th and 6th Troops led by Captain Chalmers on this occasion made a dashing charge, capturing several guns in position, one Native officer and three troopers were killed, while three Duffadars and sixteen troopers were wounded, two of the latter mortally. For this affair Captain Chalmers received a Brevet Majority, Ressaldars Ramrutton and Chooramun, Jemadar Mookhram Sing and one non-commissioned officer and three troopers got the 3rd class order of merit for conspicuous gallantry.

26. On the 28th of March 1858, the regiment were engaged in an attack on a body of mutineers, who had taken up their position in the first or lower range of the Nepaul Hills, receiving for the same, the thanks of Government and of His Excellency the Commander-in-Chief.

27. On the 29th of April 1859, a squadron and Head Quarters of the corps formed part of a column under Major Murray, that defeated the Nusseerabad and Neemuch mutineers near Dinapore in the Goruckpore district. For this action, Major Murray and his column received the thanks of Government and the Commander-in-Chief. G. G. O. No. 848 of 1859. On the same day, Kullian Sing, a Jat sowar, while on picquet duty single handed killed two of the rebels, and for his gallantry received the 3rd class order of merit.

28. From November 1859 to February 1860, the regiment was broken into detachments along the frontier, having its Head Quarters at Doomurriagunge, and in the latter month formed part of a force under Brigadier Holdish, C. B., taking part in all the operations that terminated in the capture and surrender of nearly all the rebels and their leaders ; at the conclusion of which "Murray's Jat Horse" were for the first time permanently cantoned at Sultanpore, Benares.

#### BHOOTAN CAMPAIGN OF 1864-65.

29. The regiment formed part of the Bhootan Field Force, with

which it was employed in different parts of the 'Dooars' from December 1864 to February 1866, and received the thanks of Major General Fraser Tytler and Tombs for the very good services performed.

30. The Bhooteas so seldom ventured near the plains, that the Infantry had all the fighting except at 'Dewangeeri,' where the Jats under their gallant leader Lieutenant Welchman, proved, that they could fight as well on foot as on horseback, that young officer having dismounted half a troop armed them with carbines, and agreed, in conjunction with the 43rd Native Infantry, to attack the principal stockade. When the signal agreed upon was given, the Jats rushed forward, and before reaching the stockade had one-third of their number shot down; the position, however, was seized and held by this small party until it became evident, that something had retarded the progress of their allies, without whose assistance the Jats found it impossible to hold their own, and were obliged though most reluctantly to retire. On this occasion Lieutenant Welchman behaved most gallantly, being as bravely supported by his handful of Jats, who then, as in many a former fight, proved that when properly led India boasts of no braver Native soldier than the Jat of the Dooab. The special thanks of the Commander-in-Chief were tendered to Lieutenant Welchman and his party, of whom two were killed and several wounded. Ressaldar Chooramun was advanced from the 3rd to the 2nd class, and five sowars received the 3rd class order of merit.

31. Lieutenant Eardley Wilmot was wounded in another skirmish, and he with Lieutenants Lockhart and Sartorius received the approval of Government and the Commander-in-Chief for their praiseworthy conduct, under circumstances far more trying than that of warfare, *viz.*, attending upon and administering to the wants of their men during a severe outbreak of typhus fever, dysentery and cholera.

32. Murray's Jat Horse lost during the Bhootan campaign from sickness, and other casualties 73 men and 150 horses, and on their return to the Provinces 150 recruits were entertained to replace the men who were invalided or obliged to leave the service, from the effects of Bhootan fever; while new equipments of every kind for man and horse were supplied to the entire regiment at a very large outlay, in lieu of those completely destroyed from exposure in so damp a climate.

B. W. RYALL, *Lieut.-Colonel,*

*Offg. Comdt. 14th Bengal Lancers.*

## IV.

## NOTES ON THE SIKHS AS SOLDIERS FOR OUR ARMY.

BEFORE we consider the Sikhs as they now are, it may be as well if we glance very briefly at the state of the country immediately preceding the days of Nanak,\* and at the rise and progress of the Sikh faith and nation.

Upper India, peopled as it is supposed, in prehistoric times by a branch of the Circassian race, received in times still remote a wave from the plains of Upper Asia of the race who are now called Jats. These again were succeeded in time by other waves, still from the north, of Scythic and Persian tribes. Each wave, intermingling with the previous inhabitants, left its distinctive marks, and introduced changes into the state of those preceding it.

Thus in the beginning of the sixteenth century, when Nanak first laid the foundations of his new faith, the inhabitants of the country consisted of—1st. Those whom we may call the Aborigines, such as the Bhattis, Jans, Dardūs, Dangars and perhaps the Gujurs; 2nd, The Jats; 3rd, The Hindus proper—Brahmins, Khattris and Sudrs; and 4th, The Mahomedan invaders and their converts.

In the Panjab and Upper India these races may be roughly estimated as being in the following proportions :—Jats four-tenths; Hindus two-tenths; other tribes three-tenths, and Mahomedans one-tenth.

The religious history of the country may be summed up in a few words. Beginning, it is believed, with a religion resembling a modified form of Buddhism, it was succeeded by the enlightened and pure Brahminism of Mannu and the Védas; but idolatry and superstition soon crept in, and when the Mahomedan invasion overtook India in the beginning of the tenth century A. D., the monotheism of the ancient faith had departed and idolatry and priestcraft reigned supreme. The faith of Islam profited nothing by the contact, but soon had imitated the meretricious habits of the conquered; and Saiads and Shékhs, saints and martyrs, began to rise between man and his Creator. This led, as it ever does, to the rise of reformers; and in the fifteenth century Ramanand, Goraknath, Chaitan and Kabir had each in his turn advanced the cause of enlightenment and had succeeded, in some measure, in emancipating men's minds from priestcraft, idolatry and polytheism.

Thus it was to a people of strangely mixed races and with minds ripe for the reception of religious reform, that Nanak spoke.

His own success, as far as it could be estimated by the number of his followers, was but small; but dying he believed that he was enabled

---

\* I have pursued the Hunterian system of transliteration throughout this article for the sake of uniformity.

to transmit his own body, Ang-i-Khud (corrupted to Ang-gad,) to the Gurus who succeeded him ; and his faith amid much trial and with slow steps gradually gained ground.

He was succeeded by nine other Gurus ; the first of his successors and the second Guru was a chosen disciple named Lehna, who took the mystic title of Ang-gad on succeeding to the Guruship. The third Guru was Amardās, another disciple. The fourth Ramdas, the son-in-law of Amardas. He was the first to establish himself at Amritsir. The fifth Arjan, who compiled the writing of his predecessors and called it the Granth.

The sixth was Har Gobind his son, the first Sikh military leader.

The seventh Har Rai, his grandson.

The eighth Har Kishen, his son.

The ninth Teg Bahadur, the son of Har Gobind.

And the tenth and last, Guru Gobind.

This last and greatest of the Guru died childless, and on his deathbed declared that henceforth the Guru should dwell with the Khalsa or Sikh Commonwealth ; that wherever five Sikhs were gathered together there should the Ang-gad be present.

Banda, a favorite companion of Gobind's, succeeded to the temporal power. Then came a time of great persecution at the hands of the Mahomedans, and fights with the Durani invaders from Afghanistan. But through it all the Khalsa grew and prospered. In the middle of the eighteenth century the Sikhs were becoming a nation, though still dispersed into twelve great confederacies called "Misl." These soon found in the genius of Ranjit Singh, a power that could unite them, and under him the Khalsa grew a coherent nation, stretching from the Sutlej to Peshawur, and from Multan to Cashmir. After his death came the fatal days of anarchy and treason, the invasion of our territory and the punishment, the gradual extension of the British dominion, and the peaceful measures and intelligent rule which converted our sturdy enemies into friends who stood us in good stead in our need in fifty-seven, and who now fill our ranks with some of our best soldiers.

In considering the soldierly qualities of the Sikhs and their fitness for service in the ranks of our Native Army, I propose to review them under the following heads :—

- I. Their religion.
- II. The races and castes of which they are composed.
- III. Their geographical limits and divisions.
- IV. Their ceremonies and customs.

## V. Their character.

All these heads contain matter more or less useful to the officer who has dealings with Sikh soldiers for questions of religious prejudices, the necessity for leave to carry out some ceremony or custom etcetera, are constantly coming before him, and some knowledge of these matters is necessary to enable him to act justly and intelligently.

I. *Religion*.—The Sikh religion, as it was founded by Nanak, was a pure monotheism. Its leading creed may be summed up in the words—The one God is a spirit and must be worshipped in spirit and in truth. It possesses little or no ritual, but upholds faith—good works and grace as essential to salvation. The Granth is its Holy Scripture, containing spiritual as well as moral teaching. It is written in verse throughout, in the Gurmukhi character, and chiefly in the language of the Hindi of Upper India, though a small portion of it is in Persian. It consists of two parts. The first called Adhi Granth, containing the writings of the first five Gurus, compiled by Arjan, the fifth Guru, with additions by the four following Gurus. The second called “Daswin Padshah ke Granth,” and containing the writing of Guru Gobind the tenth Guru. Portions of both parts consist of writings of certain “Bhaggats” or saints, followers and disciples of the Gurus. The spiritual teaching is love, reverence and obedience to one eternal God. It abhors idolatry, the worship of saints or martyrs and asceticism. Its moral teaching is purity of life, equality of mankind, charity, cleanliness and fidelity to the Khalsa. The prohibitions it contains are aimed chiefly at the mal-practices of Hindu ascetics, and interdict the use by a Sikh of a cap (topi) on his head, a thread round his neck, the wearing of clothing dyed with “suhī” (safflower), the worship of graves or dead men, bathing nude or exposing the person in any way, wearing charms, and eating at the hands of a Mohomedan. It also forbids in one place, (the Tankha Namah) the use of snuff (Niswar); this is the only mention of the prohibition of tobacco in the Granth, though now-a-days the strongest veto is placed upon it by the Sikhs.

There are three prayers appointed for daily use; the Japji in the morning before breaking the fast; the Roh Rās before the evening meal, and the Sohila before going to rest.

The idea of the Khalsa or Commonwealth has a high place in the religion of a Sikh, and though its talismanic power is much impaired now yet it still exists.

In the earlier days of the faith, it was imbued with a strong spirit of proselytism, but this seems to be dying if not dead; for a Sikh father does not in the present day, even insist upon his son becoming a Sikh, and in many families some of the sons are Sikhs, while others are Mohahs (shaven).

II. *Races*.—As we have seen, when the Sikh faith came into exis-

tence it found a strangely mixed population inhabiting the land, and although one of its dogmas is equality of mankind, yet this extends rather to its religious tenets than to its social laws. Thus while all Sikhs will drink water one from another, (except from the lowest classes), they will not intermarry. The old distinction between Brahmin and Chatri and Chatri and Sudr still hold their own in a social sense. The distinctions are many of them merely those of occupation, but as each occupies a social position of its own, they are worthy of the study of the officer of a Sikh regiment ; for though inferiority of social status may not have much influence in the ranks, directly we come to elevate a man into a higher position, that status does call for attention ; more especially is its influence felt in all fatigue duties, and in such work as does not come within the province of the Field Exercise ; where the example of a man of good class will act as a much greater stimulant than that of a man of lower birth. Doubtless the military rank we confer does carry with it some status, even in village communities, but a few minutes' conversation will shew any inquirer how vastly different is the position of the native officer of low class in his village from that which his rank gives him in his regiment.

The chief social classes may be enumerated as follows. 1st, Brahmin ; 2nd, Jat ; 3rd, Khatri ; 4th, Arora ; 5th, Lobana ; 6th, Katal ; 7th, Saini-kambo and Maitan ; 8th, Tarkhan, Lohar and Suniar ; 9th, Maira ; 10th, Nai ; 11th, Chimba ; 12th, Kumar ; 13th, Chumar and Mazhbi.

I have placed the above according to their social rank and in this order I propose to consider them.

The Brahmins have brought into the Sikh faith, not only their social rank but some of their priestly influence. Thus, on feast days, a Brahmin, without reference to his military rank, gets presents and offerings from men of other classes ; *e. g.*, a Brahmin sepoy from a Jat Subadar, if the latter feels constrained to make an offering. The Sikhs generally say that this priestly influence is seldom or ever allowed to the detriment of discipline, and that when on duty the low caste officer will seldom fail to punish an erring Brahmin sepoy. This I fear is not as often true as they would wish us to believe, and the fact that such partiality occasionally occurs is bad enough. Brahmins are not much in the habit of seeking service as soldiers. Nor, as a rule, do they take to agriculture. They generally live on charity, men of certain families among the lower castes having certain chosen families of Brahmins upon whom they bestow alms. When they do serve they occasionally make good soldiers, though, as a class, they are physically not equal to the Jats and Lobanas, and they have the reputation of being less brave. They are not a class to be encouraged in a regiment, nor are they themselves fond of serving, they are apt to grow tired of a life of labor when one of ease is open to them.

The Jat cultivator, rustic, as the word implies, makes an excellent soldier. Innured to hard labor, exposure and often hard fare from his earliest

2nd. Jats.

days, yet leading a healthy open air life, his frame is better fitted than that of most Eastern races to undergo the hard work and strain that often falls on soldiers in every service. His disposition is a genial one, and his character independent, for his associates have been his equals and he has lived upon the proceeds of his own lands. His hardiness in the use of agricultural implements and ropes, his experience in lading and care of beasts of burden, and his training generally has been one to develop his physical powers and handiness.

The Jat should be enlisted young, for there is a stage when the slouching gait of the husbandman and the stoop in the shoulders become too matured to yield readily to drill and the backboard. Jats, consisting, as they are said to do, of two-fifths of the inhabitants of the Panjab, are necessarily divided into a large number of clans or families. These are called 'Gôts' ; some of these are as follows:—

|           |            |          |          |          |
|-----------|------------|----------|----------|----------|
| Bhuller.  | Man.       | Her.     | Sandu.   | Bafwe.   |
| Dhaliwal. | Dhillon.   | Injar.   | Ghuman.  | Bat.     |
| Pannu.    | Chal.      | Chime.   | Sidhu.   | Padde.   |
| Sauge.    | Oulak.     | Deo.     | Aojle.   | Kaller.  |
| Bal.      | Bandechhe. | Nahal.   | Malli.   | Gil.     |
| Tihare.   | Virk.      | Chine.   | Saugher. | Dotar.   |
| Sarai.    | Jhinjar.   | Battuke. | Sekhoir. | Bindhar. |
| Badhal.   | Tattole.   | Khak.    | Pote.    |          |

There are very many more clans, but these are some of the larger ones.

Of these the clans of Bhuller, Man and Her, are on all hands accorded the chief place, though really there is little or no difference in the status of any of the clans. Any one of them will readily intermarry with any other. Social custom does not permit a man to seek a wife among the members of his own Gôt.

The common village name for a Jat is "Zemindar."

The Khattris are the lower branch of the royal and military Khatri race, who in the days of Pursram preferred to embrace the safer livelihood of trade, leaving to their brethren the Chatris

3rd. Khattris.

the nobler profession of arms. They now constitute the wealthier class of wholesale traders or merchants.

They are divided into three principal classes. The Charjatis, Barajatis and Bawanjaies, from the last of which came the Gurus, who belonged to the Bawanjaie families of Sodhi, Behdi, Tilan and Bhulleh, a fact that has conferred upon these four families somewhat of a holy character. Men of the Khatri class are generally smart and intelligent, possessing the power of acquiring a knowledge of drill and accounts more rapidly than the Jat. The history of their race shews many names that have risen to high power, and have shewn military qualifications of no mean order, even of late years. Harri Singh, the best of Ranjit Singh's Generals, Mokam Chund his Minister and General, and Sawan Mal, Governor of Multan, all belonged to this class. But, as a class, they are not warlike, and there attaches to them some of that stigma which in days less enlightened than the present, coupled itself even in our land, with the word trade. They are undoubtedly looked down upon by the above mentioned races, and although here and there we find one who, by great superiority of mind, has acquired an influence as a leader; yet as a class, they are not well fitted for military service, nor are they suited to be placed in positions of command over men of superior classes.

Physically they are inferior to the Jat and Lobana, nor has their experience made them so handy, nor their position so independent and manly.

Belonging with the Khatri to the class of traders the Arora occupies the lower position of the petty shopkeeper. They are said to be the offspring of Khatri fathers by Sudra mothers. They are divided into two main families, called Utardi and Dakahni (North and South).

The same moral and physical objections, and even in an enhanced degree, attach to the Aroras as to the Khatri, and it can be but seldom that one of this class is fitted for advancement to the non-commissioned ranks.

In the Panjab the word Kirar is employed generally for the whole trader class.

Carriers. These in the days of bad roads and inferior means of wheeled transport, were an important portion of the community; the Khatri and the Arora were their chief employers, so they too rank below the trading classes. Physically and intellectually there is but little to choose between the Lobanas and Jats; they possess too in perhaps a higher degree the useful knowledge of the lading and care of beasts of burden. Thus in this class we find many of the qualifications we seek for in a foot soldier of our Native Army. Of late years the improvement of roads and the multiplication of means of conveyance has in a great measure robbed these men of their legitimate employment, and many of them



have purchased land, and taken to agriculture. For this reason I don't think they are as much looked down upon by the Jat as their position in the social scale would seem to imply. Nevertheless their social inferiority is very marked and this should be allowed its due weight in the enlistment of this class, and still more in its advancement to the higher grades.

**Wine sellers.** One of those peculiar classes founded on occupation which has become hereditary.

6th. Kalal. This class and all below it, except Mazbhis, may not aspire to the office of Granthi. Many of this class have land, and they sometimes offer themselves for military service. Physically and intellectually there is but little inferiority to the Jats, but they are looked down upon by all the preceding tribes.

**Gardeners.** The Saini are considered somewhat superior to the other two, for they will only cultivate their own gardens, while the Kambo and Maitan will hire themselves out to cultivate the gardens of others. Many of these men possess land, and there is nothing in their physique or intelligence to bar them from making good sepoys.

**Carpenters, blacksmiths and goldsmiths.** This is the class of handicraftsmen, and though placed so low in the scale, one may often meet with members who are quite the equals of the superior classes in appearance. The village name of the Tarkhan Sikh is Ramgaria, and the Suniar is often called Zargar.

**Kahars, the servant class.** This class and all below it are too low to make good soldiers. Of course I except the Mazbhis, who have shewn how well they can do under able British leading.

9th. Maira. Barber. Village name "Naherna" (nail cutter.)

10th. Nai. Washerman. Village name "Namabounsai."

11th. Chimba. Potter.

**Leather worker and sweeper.** A churah who takes the Paohl, and abstains from eating the bodies of animal that have died from natural causes, becomes a Mazbhi. Some men of this class res-

13th. Chumar, Mazbhi. cued the body of Teg Bahadur the 9th Guru after his decapitation at Delhi, for which service they were much praised by his son. They can become Granthis for their own class.

*III.—The Geographical Limits and Divisions.*—The country of the Sikhs may be said roughly to lie around Lahore and Amritsur as a centre, to extend from the Chenab in the north-west to the Jumna about Paniput to the south east, and from the Kangra hills to the north-east to the line Pakpatten, Leia in the south-west.

The two great geographical divisions are Malah and Manjha, the inhabitants of which are called Malwai Sikhs and Manjha Sikhs respectively.

The river Satlej is the geographical boundary between these two, and is a fairly correct one, though many families of both Malwais and Manjhas have crossed the river and now live within the boundaries of their late neighbours.

Among the Malwais are numbered the protected Sikh states, Patialla, Jheend, Nabha, etc.

From the Manjhas there is a large class amounting almost to a division called "Doaba," inhabitants of the Doab lying between the Satlej and Bias, and commonly known as the Jalandhar Doab.

The mass of the rural population are Jats. The clans are so much scattered in groups of villages over the whole country, that it is difficult to assign to any clan any peculiar locality. The Bhullers are said to live chiefly to the west of Lahore, and the Mans to the south and east of Amritsur; but the constant migrations which are yearly taking place render it impossible to say where the mass of any one clan may be found.

The Khatris and Lobanas too are even more scattered, plying their trade wherever an opening offers. Their purchases of land too are made without any endeavour to keep up local distinctions of class. The Lobana however is but rarely met with in Malwah. The relative values of the different districts as fields for recruiting depend entirely upon the class of man it is wished to enlist. For Manjhas, the country round Lahore, Amritsir, Taran Tarān, Battala and Gurdaspur. For Doabas, Jalandhar and Hushiarpur. For Malwais, Firozpur, Ludianah and the protected states, are all admirable fields, and in all of these are groups of villages of good families to be found; for the different clans and families are as well represented in Malwah and the Doabas in Manjha proper; and though there is a fairly marked difference between the Malwais and Manjha Sikhs, in dialect, appearance and manner of wearing some of their clothes, especially the turban, yet in point of family and social status the Jats on both sides of the river are one.

*IV. Ceremonies and Customs.*—On the 13th day after the birth of the young Sikh, the mother undergoes purification and the child is named. This ceremony is called "Terawen" from the day of its performance. If the child be a girl, she is named according to the parents' fancy and in their home; but if it be a boy it is conveyed to the Dharmasala and there the Brahmin, if there is one

takes the Patri and ascertains the initial letter of the child's name. The Patri is a kind of Nautical Almanac, it has each period of the signs of Zodiac divided into six places, and each place has a letter, or a combination of letters assigned to it, which according to the hour of the child's birth fixes the initial of his name, *e.g.* if the letter were an R. the child must be named Ram or Rūr or Ranjit, etc., but it must begin with an R.

Should there be no Brahmin, or should the father prefer it, the boy is taken to a Granthi, who after repeating certain portions from it, solemnly lets the Granth fall open wherever it chances; he then looks at the heading of the Shlok where it opens, and the initial of that heading must be the initial of the boy's name.

As soon as a girl in the home of respectable well-to-do parents reaches the age of four or five years, arrangements are made for her betrothal. The father employs as an agent a barber, a Brahmin, or a Dūm (fiddler), who proceeds to the village of some other "Gôt," than that of the parents, and having found some young boy suitable in point of position, age, and family, asks the father to assemble the elders of the village, and in their presence, after one or two forms gives the boy a date to eat, after this questions of dowry, &c. are settled, and the betrothal is accomplished. This ceremony is called *Kurmai*, *Natha*, *Mangiah* or *Lahagan*. This is not an indissoluble contract, but may be broken at the will of either contracting party, liable to some questions of money advances, &c. The girl's father will often threaten a man that, as the girl is getting on in years, if the man does not come and marry her, he will give her to some one else, a fruitful source of applications for leave. Between the ages of six and ten the marriage takes place, this is called *Biah* or *Shadi*. The bridegroom and a number of his relatives proceed to the bride's house, and convey her with much ceremony to her future home. She travels in a covered dooly, and is attended by the barber's wife (*nain*). She remains an honored guest in the bridegroom's home for three or four days, and then returns to her own home.

This contract is binding and cannot be annulled. When the girl arrives at puberty the third ceremony takes place. This is called "*Mukhlawah*." If the girl is of sufficient age this may take place at the same time as the *Biah*, otherwise it should be performed one, three, five or seven years after it. The bridegroom proceeds with a few of his nearest relatives to his bride's house, and takes her to live with him. She usually remains there forty days treated in all respects as a wife. She then revisits her own home for a few days, and her third departure to remain permanently with her husband is called "*Firowza*." If the girl's parents are very poor the bridegroom may keep his wife in his house after the *Shadi*, treating her, if she be sufficiently young as a child, until she grows up.

At each of the three ceremonies the bride's father is supposed to give a feast and something in the way of dower. When the girl's father is

not a man of much repute, he generally demands something for his daughter, and when the bridegroom is of age this is usually the case, but the custom is considered a low one.

The ceremonies of *Biah*, *Mukhlawah* and *Firowza* may all take place at the same time, where the age of the couple permits it.

The ages I have given are those at which respectable men of means have their children married. Poor people often cannot obtain suitable matches, until their children of both sexes attain a much greater age. It is under these circumstances that the ceremonies are generally hurried on. The rule is that a girl ought to be married before she is twelve.

When a woman becomes a widow, either before or after the consummation of her marriage, she can claim the protection of her brother-in-law, or if there are none of them, even from her husband's cousin, and the man is bound to take her, undergo a ceremony termed "*Chaddar dalna*," and treat her in all respects as a wife. A plurality of wives is not prohibited to a Sikh, but it is not often indulged in. The limit is five, especially if he has no sons by any of the first four. When a woman has been some time married and has had no son, if her husband is a wealthy man, she generally asks him to take a second wife for the purpose of procuring an heir to his estate.

The funeral rites of the Sikhs are as follows :—

As soon as death is evidently approaching, the patient is taken off his bed and laid upon wheat straw, which has been spread on the ground. After death he is conveyed on a wooden frame to the funeral pyre. It is unlawful to carry him on a *charpai*. Half way to the place of burning the body is put down, and the nearest relative takes a vessel full of barley and one or two other things and smashes it at the head of the corpse. This is called *Adh Marg*. On reaching their destination half the wood is arranged and the body placed on it with the head to the north, the remainder of the wood is piled over it, and the nearest relative takes a torch, and after walking three times round the pile sets fire to it at the end where the head is. When the body is consumed he smashes in the skull with a thick stick, this is termed "*kopal kiria*."

On the fourth day the eldest son collects the knuckles and teeth which have not been burnt, called *Phul*, and buries them in an earthen vessel in the wall of his house, until an opportunity occurs of consigning them to the sacred stream of the Ganges.

When a boy reaches a fairly intelligent age, about twelve or thirteen he has the Pahol, or Sikh oath of initiation administered to him by the Granthi. He is dressed in the "*kach*," a pair of tight white drawers reaching half way down to the knee, and is girt with a sword. Some sugar and water is mixed called "*Anrit*," water of life. A portion of this is sprinkled in his face, and he drinks the remainder exclaiming, *Wah Guru ji ka khalsa—Wah Guru ji ka fatteh*. He is then directed

how to keep and care for his *kes*, the long hair worn by Sikhs, how to knot it into the "*Jurah*" knot, which is worn on the top of the head, and which has to be taken down and combed out twice a day, he is forbidden to dye his hair or beard, to eat or drink uncovered, or in company with women, to have any intercourse with Mussalman women, and to smoke or touch tobacco; the vehemence with which this last clause is insisted upon depends a good deal upon the ideas of the Granthi giving the oath. There must be five Sikhs together to make the initiation lawful.

After the ceremony the Acolytes all eat "*karra pursad*" together, when a number have gone through the ceremony at the same time.

The Sikh salutations are very simple. When two Sikhs meet, the inferior or younger salutes the other with *Wah Guru ji ka fatteh*—*Wah Guru ji ka khalsa*, to which the other makes a similar reply. Sikh women salute each other with "*Matha Tegdi*," my forehead to your feet. Men meeting women say "*May your husband be well*," or "*May your father or children be happy*."

The sons of a Sikh all inherit an equal share in the land or property of their father. Daughters and sons-in-law do not inherit anything by right.

The food of Sikhs consists of the flesh of the goat, sheep, fowl and most birds, and of the wild pig, but their staple articles of food are *atta*, *dal*, *ghi*, *sugar*, *gur*, etc. The larger animals must all be killed by decapitation, the birds by wringing the neck; those killed in sport are excepted. Women do most of the cooking, but they are not called upon to cook any kind of flesh, neither do they, as a rule, eat meat; the idea being, when they do, that they were witches in a previous existence.

The *Karra Pursad* is a species of holy food; it is much given in charity, and is a standing dish at all religious ceremonies. It consists of equal portions of flour, sugar and *ghi*, with a double portion of the whole of water; thus if there were one seer of flour there would be six of water. Any Sikh will eat this at the hands of any other Sikh except at those of a Chumar or Mazbhi.

The Sikhs believe in the transmigration of souls; men who have lived godly lives are either taken at once into heaven, or are born again into some great and wealthy family. If their lives have been wicked, their souls are made to undergo two or three transmigrations into insects or the lower animals; or if very ungodly are sent to hell without a further chance.

*V. Character.*—In speaking of the character of the Sikh nation we are again reminded of the various races from which it has been formed. In the case of the English nation time has brought about a fusion of Briton, Saxon, Dane and Norman, and has produced an integer, the Englishman; and one of whose character as an individual we can speak; but in his case

there has been an actual intermingling of the blood of the component races. With the Sikhs, the prohibition of intermarriage, necessarily prevents any such complete fusion, and Brahmin and Jat, Khatri and Mazbhi, each hands down from father to son the characteristics of his own race. Yet it would be wrong to say that the Sikhs as a nation do not possess any individuality, for the absence of actual caste, as preached by Nanak, the stern and warlike nature of the iron creed of Guru Gobind, the *baptême du feu*, through which the nation passed in its earlier days, and the coherent rule of the Sikhs as an individual nation in the days of Ranjit Singh, have undoubtedly stamped them with a national character ; though this character is assumed in a greater or less degree according to the fraction from which each member is sprung.

This national character is a fine one, and produces admirable military materials. Although capable of showing élan and vivacity when the occasion requires it, the Sikhs are rather steady, earnest and stubborn than impetuous ; better fitted for deeds requiring unflinching resistance than for those requiring dash ; better suited for holding a position than attacking one. They are undoubtedly brave ; one of the strongest tenets of a Sikh, and one that is emphasized at his initiation, is that he must not die with his back to an enemy. They possess a strong feeling of independence, are straight forward and manly, genial in disposition and not quarrelsome. They have a good deal of self-esteem, and, for Orientals, a fairly high standard of honor. They are faithful and true to the salt of the Government they are serving, and seldom show insubordination. Their chief failing is a want of open handedness, amounting in many cases to meanness, and occasionally taking the miserly form of starving themselves for the sake of saving money. A tendency that is a fruitful source of disease, and of the weakness which renders men obnoxious to any epidemic that may be raging. This requires to be watched by both combatant and medical officers of Sikh regiments.

As I have said, while we may take this as being generally the character of the Sikhs as a nation, we find different races and localities differently impressed by these characteristics. In the Jat these are most strongly developed ; indeed the preponderance of this class may be said to have impressed its own character, in some measure, on the whole nation. Even among the Jats there are differences to be found. For instance, the Jat of Manjhais conspicuously genial and good tempered, joining heartily in games and recreations, while the Malwai, if less genial, is more stubborn, working quite as conscientiously but less cheerfully ; this very stolidity renders him perhaps less liable to panic, and though I myself prefer the Manjha Sikh, I doubt if, in soldierly qualities, there is much to choose between them.

The Brahmin again has his own idiosyncracies, a really good man of this class possesses both education and more of thoughtfulness than the Jat, and is well suited to be a leader of men, but for one good man there are ten whose lives of sloth and alms taking have unfitted them for the hardships of a soldier's career and robbed them of the power of command.

The Lobana possesses the quality of subordination in an eminent degree, arising doubtless from the subordinate position which the class has occupied. Imbued though they are with the national characteristics, they always appear to be good soldiers rather in a passive than in an active sense. They are quiet and orderly in quarters, and in the field they are obedient, clean and well set up, but generally speaking there is a want of individuality about them; and while, I believe, they will follow well enough, they are not the style of men to initiate a rush, or to be worked up into any very high state of enthusiasm.

The Khatri and Arora share with the Lobana the spirit of subordination; and the military spirit of the Sikh faith is in their case much impaired by the spirit of trade and barter, which their profession naturally fosters.

While looking thus generally at the characteristics of the different classes, one cannot help being struck by the exceptionally good men that sometimes come from those less esteemed. The Khatri, as we have seen, have produced men not only good as financiers and cabinet ministers, but also as governors and military leaders, and so it is with all the classes. We occasionally get a first-rate Lobana, Kalal or Suniar, but the exceptions do not vitiate the rule, and for good native officers and non-commissioned officers one should go to the good classes.

*Conclusion.*—In reviewing the qualifications that influence the Sikh in his fitness for military service, his physical qualities, his bravery, endurance and sturdiness stand prominently forward in his favor, while his want, in some measure, of élan, and his possession in so small a degree of that intellectual development which is needed in the modern soldier, point out his shortcomings.

The tactics which suit the Sikh character are rather defensive than offensive, and modern warfare is less suited to them than the slower and more deliberate tactics of the battles of a quarter of a century ago. As skirmishers they are undoubtedly wanting. They have not the eye for ground, and they seem to find it most difficult to take cover rapidly and cleverly. For the attack of a position they require to be deliberately led, and while they are less liable to panic and reverse than most other Oriental nations, they lack to some extent that intelligence which would enable them to comprehend the aim of their leader and exert their individual intelligence for its accomplishment.

These considerations shew the necessity for much thought for the officer who has to command Sikhs, both for himself and for those he commands. He ought to be of a peculiarly cool disposition. One who never loses his head; who takes his measures without flurry, and commands deliberately and determinedly, and yet who is capable of firing those under him with enthusiasm and dash at the moment when it is required. He should try, in his intercourse with his men during peace, to gain their affection and confidence, by sympathy in their affairs and

a knowledge of their habits ; and they will well repay him in the field by cheerful obedience and unflinching following. The points which call for his chief care are the development of individual intelligence. Most careful teaching of the Native officers and non-commissioned officers as to commanding their men with a view to the end aimed at, to try and make them think, and encourage them to act on their own judgment, being specially careful to deal with them kindly when they do wrong with a good motive ; to exercise the greatest care in teaching the privates to skirmish, to understand the principle of taking cover, of advancing under fire in extended order, and affording each other mutual support. He should practise his men frequently in the attack of positions, especially, where the locality will admit it, of heights and hills. Outpost duty too, and everything that can call forth individual intelligence in officer and private. Steadiness in manœuvring and the confidence which a strict parade discipline gives, are, of course, worthy of his attention ; but this is not the point where the Sikh is most liable to fail ; what he most requires is to be taught to act when he is alone and not under the immediate eye of his British officer.

Sikhs do not require much punishment ; as a rule they try to do their duty, and constant drills and punishments for trifling offences are particularly aggravating to men of their disposition. Punish severely when the necessity arises, but kindness and, above all, even-handedness and impartiality will keep a regiment straighter and more loyal than constant punishment and fault-finding ; and the officer who has won the confidence, esteem and affection of a Sikh regiment, ; who does understand something of their character and feelings ; who has developed in them as much individual intelligence as in his power lies, holds in his hands a weapon which will not fail him when called upon, certainly against anything he is likely to meet with in this country ; and which, even, in my opinion, would prove a tough customer to a European enemy, if an opportunity should occur of Native troops being once more called upon to meet a continental army.

H. C. P. RICE, *Captain,*

*2nd in Command, 1st Sikh Infantry.*

*Note.*—I am indebted to "Cunningham's Sikhs" for most of the Historical and Religious part of this article.



## V.

THE ADMINISTRATION OF MILITARY LAW, ITS DEFECTS  
AND THEIR CORRECTIVES,

BY CAPTAIN W. E. CHAMBERS, BENGAL STAFF CORPS.

THE subject of Military Law as a branch of an officer's education, having lately increased in importance, many essays and newspaper articles have been written on it. The general opinion would appear to be that it has not hitherto received sufficient attention, and that there is a deplorable amount of ignorance regarding it amongst all ranks of the army. It is moreover inferred, even if not expressly stated in words, that the fault lies with the officers, and that even though the study of it be admittedly difficult and uninteresting, still each individual ought to apply himself diligently to it. This is quite in accordance with the Queen's Regulations, but very few persons who have not themselves attempted it, have any idea of the difficulties which stand in the way of the young Military Student. A few remarks on the subject culled from various sources, together with some thoughts which arise from them, and a few original suggestions may perhaps be of use.

There is a prevailing notion that Military follows the analogy of the Civil Law; a careful analysis will prove however, that they are essentially different. By the first the will of one man, the Commanding Officer, whoever he may be, is made paramount, and for any subordinate to disobey or even dispute his orders, even though they may be defective, constitutes a crime. The second requires every person to act on his own responsibility; it would be no excuse for a culprit to plead that an offence which he had committed was in consequence of an order received from another, even though that other might be his father whom he felt bound to obey.\* There are a very few exceptions, such as that of a wife acting under personal supervision of her husband, but we may put them on one side as we are at present only engaged with the general rules.

Why this immense difference? Because Social Laws (that is Civil, Criminal, Ecclesiastical, &c.,) have for their object *gently* and *gradually* to form the habits of society to a rational, religious, moral state, by a steady and long continued action upon human nature. Social Laws are mostly of a negative nature. Military Law on the contrary is to enforce an unhesitating and instant compliance with all orders received?†

The distinction between Military and *Martial* Law must be carefully borne in mind. The former is "the law administered by Courts Martial for the ordinary government of the Army,"‡ whilst the latter has never been accurately defined, though every one has a general idea of what it is like in practice.

\* Napier on Military Law.

† Napier.

‡ Papon.

Those who wish to gain some knowledge of the principles on which all legislation is based, and especially the dogma of general utility, will find the "Theory of Legislation by Jeremy Bentham" interesting. The translation into English by R. Hildreth puts this work within the reach of every one.\*

Another fundamental difference between Social and Military Law is that "Expedience" takes the place of "Equity." For instance, Equity would not cause a man to be shot for being a coward, because he cannot help it, but "Expedience" does so.† Enough has now been adduced, we trust, to prove that there is no analogy between the principles of Military and Civil jurisprudence.

II. In many cases the principle on which English law rests, may appear at first sight to the non-professional reader, to be opposed to the dictates of common sense. In private life if a servant were accused of any misconduct, what would the master of the house do? Would he not first call the man up, inform him of the charge and ask him what explanation he had to give? What would be thought of any educated person who in such a case forbade the accused to open his mouth, and persisted in endeavouring to collect the facts from others who naturally could not give nearly such satisfactory evidence, as it must be in the power of the accused to adduce if he were really innocent? Yet this course which appears to us so absurd in private life was adopted by those who had to construct the system of English criminal procedure. We cannot suppose that these jurists were deficient in common sense, so it is necessary to look for some other explanation. The whole tenor of the rules for conducting trials was to assist the prisoner to avoid conviction, and the maxim "better that 99 guilty persons should escape, than one person should suffer," is familiar to us all. The frightful severity of our penal laws up to a comparatively recent date was probably at the root of the evil. A poor wretch who had stolen a loaf of bread to save his family from starving, incurred the same penalty as the professional robber or murderer, namely death. No wonder then, so long as the law remained thus, that those who had to administer it were on the look out for any means by which the accused might be acquitted.

The moral to be drawn from all this, is, that when the student finds any law or rule of procedure which appears on the surface to be an anomaly, instead of jumping to the conclusion that it must be an absurdity because he cannot see the object of it, let him study it all the more carefully and endeavour to discover the real motives which actuated those who formed it. The time will not be misspent, even should he fail, as such mental exercises assist to mature the judgment.

III. In Simmon's well known book it is laid down that "the same laws of evidence prevail on Courts Martial as in English Courts of common law; but where is this law to be found? On 31st March 1871

---

\* Trubner and Co., London, 1864.

† Napier.

a select committee of the Legislative Council of the Governor General headed by the distinguished jurist the Hon'ble J. F. Stephen, recorded the following remarks :—

“The English law of evidence appears to us to be totally destitute of arrangement \* \* \* \* The two sets of rules run into each other in such an irregular way as to produce between them a result which no one can possibly understand systematically, unless he is both acquainted \* \* \* with the every day practice of the Common Law Courts, which can be acquired and understood only by those who habitually take part in it. This knowledge, moreover must be qualified by a study of text-books, which are seldom systematically arranged.”

With such obstacles to overcome the ordinary military man would appear to have no chance, and we cease to wonder that so few officers attempt to make themselves thoroughly acquainted with the laws of evidence, and yet they cannot be dispensed with. Every judicial proceeding whatever has for its purpose the ascertaining of some right or liability.

If the proceeding is criminal, and Courts Martial would fall under this heading, the object is to ascertain the liability to punishment of the person accused. All rights and liabilities are dependent upon and arise out of facts, and evidence is the instrument by which the Court is convinced of a fact. As “evidence” is thus proved logically to be essential, officers who have to perform the combined duties of Judge and Jury, ought to be acquainted with the subject and the rules which govern it. But how are they to get this knowledge ?

Luckily in this country the administration of law is far in advance of the system in England. The Legislature here has been able to copy the best parts from the codes of all nations, thus reaping the benefit of their experience. Act II. of 1855 has been the Evidence Act up to the present time, but from the first day of September 1872, it will be superseded by Act I. of 1872, generally known as the “Indian Evidence Act.” The first clause expressly states that it applies to Courts Martial throughout India, and therefore every officer ought to have a copy of it in his possession. It is so admirably arranged, lucidly composed and has its meaning so clearly expounded by apt illustrations, that no person of the most ordinary comprehension could fail to understand it. No more need be said about it, except that a Mr. Fink has issued a capital edition with a copious index ?† It is much to be regretted that after their regiments have left India, officers will cease to have such an invaluable guide to assist them.

As an instance of the general absence of precise knowledge on legal subjects, how often we hear the term “presumptive evidence.”

---

\* Appendix A to Fink's Compilation of Indian Evidence Act.

† Sold by Messrs. Wyman and Co., Calcutta, price Rs. 5.

Now, there are two sorts of presumptions; first presumptions of law, such as that every child born in wedlock is legitimate, and secondly, those of fact; as a fair sample of which we may quote the common saying that "every person intends the consequences of his own acts." But to speak of presumptive evidence is nearly as incongruous as a "substantial shadow."

IV. We now have to offer the following original suggestions :—

1st. Make the rules for conducting proceedings and evidence, which are laid down in the Code of Criminal Procedure, applicable to all Courts Martial in this country. Any person who has had practical experience of the two systems would not hesitate to pronounce in favor of the Code; and those who have not had such opportunity of comparing the two, are obviously not in a position to give an opinion. This reform, however, could not be introduced without previous consultation with the authorities in England.

2nd. Let there be no more uncertainty as to the particular subjects to be studied as there is now. A correct list of the standard works ought to be issued, and at least once a year should be published in General Orders, a precis of all alterations since last notice, thus bringing the work up to date. G. G. O. No. 531 of 27th January 1864, laying down the test for examination for the Judge Advocate General's Department has practically become obsolete; and though, in accordance with the regulations, a copy of all circulars and orders affecting Courts Martial is laid on the table when a Court is assembled, from want of systematic arrangements, it is of little use. If these subsidiary instructions can be easily arranged for reference and guidance, the labor would be best performed in the office of the Judge Advocate General. If they cannot be, it is rather hard to expect officers to do so themselves.

3rd. A good "Hand Book of Military Law and Procedure," is indispensable, but this will soon be provided if the newspaper report that Colonel Maisey has been specially deputed to prepare one, be correct.

4th. Inducements to study should be held out. At present it is rather the other way. The only examination in Military Law for which an officer can offer himself, is that prescribed in the G. O. we have just mentioned. The necessary books are very costly and also bulky, thereby entailing further expense for carriage when moving from one station to another. The subject itself is admittedly "dry" at first, if not repugnant, and the examination is strict. Should the officer succeed in passing it, however, his chances of getting an appointment in the Judge Advocate General's Department are, under existing circumstances, almost nil, and he is liable to be called on to conduct the proceedings of a General Court Martial, or other similar extra work without additional pay.

To remedy this, let there be three classes of examinations. The

first, compulsory on all officers, to ascertain that they possess that knowledge of the Mutiny Act and Articles of War now contemplated by the regulations of the service. The other two should be voluntary and progressive in difficulty, and a money reward, say Rs. 150, should be allowed to the successful candidate in each to re-imburse him for the cost of the books and other expenses he had been put to. Call these two examinations the lower and higher standard in Military Law.

5th. When sitting on General or District Court Martial, each member who had passed by this higher or lower standard to receive an allowance, say 7 Rupees for the former and 5 Rupees for the latter, for each trial. Officers who had failed to qualify, should still be appointed to sit on Courts according to roster, but would receive nothing extra.

6th. When a Court Martial is ordered to assemble, each member ought to be furnished at least with a copy of the charges, which will be made against the prisoner, if not with a summary of the evidence to be adduced at least 24 hours before the trial. There would be no physical difficulty provided thin paper were used, as with the assistance of a common manifold writer, a clerk could make out six fac-similes simultaneously. This would enable those who have to perform both functions of Judge and Jury to refresh their memories on the points of law bearing on the case before it began. By the existing custom they cannot do so.

7th. The finding and sentence of the Court should be at once communicated to the prisoners to avoid the delay, sometimes long protracted, which now inevitably occurs between the date the Court closes, and that on which the Proceedings are received back from the confirming officer. Thus the accused would know the worst, and not be compelled to undergo a period of suspense and anxiety, which to some men is more formidable than the actual punishment awarded. Anything approaching moral torture is in direct opposition to all the principles of English Law, it is also most subversive of discipline, as it enlists the public sympathy for the guilty person, and should therefore be specially avoided in the administration of Military or Naval Law.

In conclusion, we may observe, that there are other forms of inducement to study which might be easily held out, if those of a pecuniary nature which we have suggested, should not be feasible from financial causes. For instance, suppose an order were issued that every officer who passed the examination before a certain date (say one year hence), would be allowed to have four consecutive months' *privilege* leave, and to go to Europe or wherever he liked, during the next leave season, there would probably be a crowd of candidates for examination, and even those who failed to qualify, would have acquired a deeper knowledge of Military Law than they ever possessed before.

W. E. CHAMBERS, *Captain,*  
*Bengal Staff Corps.*

LINGASAGOOR, DECCAN,  
8th July 1872.



## VI.

## ON GUNNERY INSTRUCTION AS CARRIED OUT IN INDIA.

THERE are few officers in the present day who will not admit the extreme importance of accuracy of artillery fire.

This accuracy is only attainable by the careful training of those whose duty it is in action to lay the guns, and no amount of care bestowed upon other points will make up for a deficiency in this.

In fact all the care bestowed upon the drill, equipment, and interior economy of a battery, is with the view of being able on service to bring it into a position from which it may deliver its fire. If then, when we have accomplished one object, and brought our battery into position, it is unable to deliver an effective fire, our labour will have been to little purpose.

The object of this paper is to enquire into the means taken in India to ensure this accuracy of fire.

The orders on the subject, as published last year in Circulars from the Deputy Adjutant General, Royal Artillery in India, dated respectively 10th August and 10th September, are in effect as follows:—

Every non-commissioned officer and gunner in each battery is to receive during the summer months forty-two hours special instruction in the subjects named below, *viz* :—

1. General construction and care of guns, carriages, and side arms, with which the practice is to be carried on.
2. Explanation of the ordinary terms used in gunnery.
3. Use and construction of tangent scales.
4. Ranges and elevations, pointing drill at fixed and moveable objects, judging distances, and use of the range-finder if available.
5. Construction and uses of the various ammunition and implements in the battery.
6. Fuze drill and shell instruction.
7. Packing of ammunition and stores.
8. Construction of gun-pits and shelter for men and horses.

At the commencement of the drill season and the conclusion of this course, the commanding officer of the battery is to examine every man who has been instructed, not only in the foregoing subjects, but also in standing gun drill, shifting wheels and shafts, disabled ordnance, &c. and the thirty men who pass the best examination, are to be selected to compete at the annual practice.

Every battery is allowed to fire yearly at practice 300 rounds; of

these 300, twenty-four are case, thirty-six common shell, sixty segment, and the remainder plugged segment. (I am here quoting only the allowance of practice ammunition laid down for horse and field batteries armed with B. L. rifled guns. Smooth bore batteries may be left out of the question as it is of course impossible to obtain accuracy of fire from them at present Artillery ranges, and there are but few other rifled batteries in the country). Of these 300 rounds each of the thirty men fires in a 9 pr. battery, which may be taken as an example:—

|   |        |         |         |    |      |        |
|---|--------|---------|---------|----|------|--------|
| 2 | rounds | plugged | segment | at | 800  | yards. |
| 2 | "      | "       | "       | "  | 1000 | "      |
| 2 | "      | "       | "       | "  | 1500 | "      |
| 2 | "      | segment | shell   | "  | 1000 | "      |
| 1 | "      | common  | "       | "  | 1500 | "      |

making a total of nine rounds each man and 270 altogether, and leaving six rounds common shell and twenty-four rounds of case to be disposed of at the discretion of the commanding officer.

Now, first as regards the special instruction, and the selection of the men who are to fire.

I have started with the axiom that accuracy of fire is only attainable by the careful training of those *whose duty it is in action to lay the guns*, i. e. the Sergeants or Nos. 1 of detachments—supposing a sergeant to be absent or disabled the Corporal would take his place, the Bombardier would be ready to supply the place of the Corporal, and possibly, an acting Bombardier to supply the place of the Bombardier; at any rate as in a full detachment (Horse Artillery) there are three non-commissioned officers, and possibly an acting non-commissioned officer besides; the detachment must have suffered very severely before the charge of the gun would devolve upon a gunner. It would appear therefore that the non-commissioned officers of a battery who will be the first called on to lay the guns, in all about twenty-four, should be thoroughly instructed in the first instance, and that however desirable it may be to instruct gunners also, their instruction should not be allowed to interfere in any way with the instruction of the non-commissioned officers.

But there are other points to be considered in selecting non-commissioned officers besides their proficiency in the subjects laid down in the order regarding instruction quoted above; and after a course of instruction it will be found that many gunners who have had equal advantages of instruction, but who for various reasons would never be selected as non-commissioned officers, pass better examinations than several non-commissioned officers, and consequently, according to the order, must be selected before them to fire.

It may be asked—why should not a gunner if a better shot than his No. 1 lay the gun in action? I reply, that in order that this may



be done, either the drill as it stands at present must be altered, or the drill remaining the same, it must occasionally be departed from in action.

As regards the first alternative, it seems for many reasons advisable that the Sergeant in charge of a gun should lay it, and that so important a duty should not, if it can be avoided, be delegated to any one of less rank or experience; particularly when it is considered that laying a gun is not like shooting with a rifle, but that any man, with sufficient intelligence to become a decent non-commissioned officer, may with proper instruction, provided only that he can see straight, become as well able to lay a gun as the champion shot of England.

The second alternative need scarcely be considered. The same arguments apply against it as against the first, and in addition, few will deny the advantage of a machine-like regularity in serving a gun in action, a result not likely to be attained, if we then begin to deviate from the drill which has been taught on parade.

Again, as every non-commissioned officer and gunner in the battery is ordered to undergo the course of special instruction, much time is lost in endeavouring to impart to men, ignorant of the simplest rules of arithmetic, and in some instances utterly uneducated, a knowledge of such subjects as, the use and construction of Tangent scales, "Rules for giving and correcting elevation and deflection," "meaning of terms used in gunnery," &c., the proper comprehension of some of which involves a slight knowledge of geometry, as well as of arithmetic: and the difficulty of imparting instruction on these subjects is increased by the unwillingness to learn, of men, who though perhaps smart and useful gunners, take no interest in subjects, which they have not the education to understand and which are never likely to be of any use to them.

There are many of the subjects of instruction which it is doubtless right that every gunner should be acquainted with, such as Nos. 1, 5, 6, 7, and 8, but to attempt to teach men the others against their will, is a clear waste of time, and disgusts both the men themselves and their instructors.

Secondly, as regards the practice itself—

#### I. The nature of the practice.

It will be seen from the orders, that the whole of the practice with the exception of 24 rounds case and 6 common shell, to be fired at battery exercise, is competitive; *i.e.* every man is firing as if for a prize against the others and against time, and it would therefore be unfair for an officer to look over his gun, and point out to him that it was laid too high, or too low, or that judging from the effect of his last shot, he had not given sufficient deflection, and so on.

Now, I maintain that however well a man may have been instructed theoretically, he requires a certain amount of steadying, which can only

be acquired by actual practice, before he is fit to commence competitive practice.

It must be remembered that all the rules laid down for giving and correcting elevation and deflection are approximate only, and that slight variations in the sighting of guns, in strength of powder, &c, require to be met by corresponding variation as regards the rules. Now when a man has been firing for some time with the same gun, and similar ammunition, and under the eye of an officer, he finds out what alterations are necessary; but if from theoretical instruction he goes straight to competitive practice, he is excited by competing against other men before he has found out what these alterations are; and having only a limited number of rounds to fire, (2) from each range, and finding in the first instance that the rules he has been taught do not bring him success, he is apt to throw them aside without giving them a fair trial, and to substitute some theory of his own, as to laying the gun higher or lower on the target, &c., although he has been taught to lay always upon the bull's eye. This I found was the case several times during last year's practices, when owing to unaccountable irregularities in the shooting, "stop" was called, and the gun looked over by an officer before being fired.

## II. As to the number of men instructed.

If it be conceded that the non-commissioned officers should first be instructed, the next question that arises is, what is the greatest number altogether that can be instructed, and here, irrespective of the question of time, the amount of ammunition allowed for the annual practice at once fixes a limit.

Three hundred rounds per battery are allowed: of these twenty-four are case, which cannot be considered of much use for instructional purposes, and at any rate, can only be useful in instruction as to case firing, which differs entirely from shell firing; this leaves available 276 rounds per battery, or 46 rounds per gun, of these, under the present rules, nine rounds are fired by each of the five men selected from each detachment.

Now in the Infantry, 90 rounds per man are allowed annually for each trained soldier, and a still greater number for each recruit. As far as firing goes, many of the non-commissioned officers and men who fire at the annual practice are simply recruits; and although it is not necessary to use so many rounds for instruction as it is in the Infantry, because by being made to look over the gun before it is fired, and note the effect of the shot, several men may be instructed by the same round; yet, under the present system, this is not done, and I think it will be generally admitted, that the experience gained from firing nine rounds at known ranges, is scarcely sufficient to make a trained marksman out of a recruit. I maintain therefore, that the allowance of nine rounds per man expended as at present, is insufficient, and that a considerable amount of the annual allowance should be expended in instructional firing, before any competitive firing takes place.

I have attempted to show in the foregoing remarks.—

1. That the principles on which under the present system men are selected to be instructed in shooting (for practical instruction in shooting commences with the shooting itself,) do not enable us to select those men who are most likely to have to lay the guns in action, and that we ought to ensure the instruction of all non-commissioned officers, before we attempt to instruct gunners.

And in addition to what I have already written on this subject, I would here urge, as a further reason for selecting the whole of the non-commissioned officers in the first instance, that by this means we shall to a great extent secure the instruction of the same men year after year, whereas if the men who have to fire are to be selected from the whole of the gunners, as well as from the non-commissioned officers, there is sure to be a large proportion of new hands every year.

2. That too much is attempted in the preliminary course of instruction, and that the accurate instruction of the men we want, is sacrificed to the superficial instruction of a large number of men whom we do not want, and who, in many cases, do not want to learn.

3. That before men are allowed to fire against time, and against one another, they require to be taught to fire slowly and steadily under the eye of an officer.

4. That, irrespective of time taken in instruction, the number of men who can be instructed yearly is limited by the number of rounds available for practice, *viz.* 46 per gun, not including case, and that this number of rounds, employed as at present, is insufficient to make good marksmen.

In conclusion I would offer the following suggestions—

1. That only a limited number of men should be instructed yearly in gunnery proper, *i. e.* in subjects 2, 3, and 4 (except as regards use of the range finder) of the special course, but that every gunner should be instructed in the remaining subjects, including use of range finders, under the superintendence of the divisional officer.

2. That the men instructed in gunnery should include all the non-commissioned officers (except Staff Serjeants, clerks and artificers,) and such men only as from their smartness and education may one day become non-commissioned officers, these last to be volunteers.

3. That of non-commissioned officers and men so instructed not more than 4 per gun be selected to fire.

4. That of the 46 rounds per gun allowed for practice, 34 be devoted to the instruction of the four, (or fewer) men, per gun selected to fire, every man, as well as the officers, looking over the gun every time before it is fired, and estimating the effect of the shot; four rounds at least to be fired

at each range practised from, before quitting it for another, and only one gun at a time to practise.

(This last proviso in order that the men's attention may not be diverted from the performance of their own gun by watching the firing of others).

5. That the remainder of the ammunition be devoted to a competitive practice between the six guns of each battery, each gun if possible to be laid by its proper No. 1, and that this competitive practise should test not only the shooting but also the general efficiency of the detachments and drivers.

For instance, one-half battery might entrench itself at one end the others at the other end of the practice ground (or if this were impossible, some other arrangement might be made in order that the entrenchments might be well clear of one another;) a certain time to be allowed for entrenching, at the end of which the gun-pits to be left as they stand; dummies representing a gun and detachment might then be placed in the gun-pits of one half battery, and the other half-battery might commence to fire at these pits and dummies first from their own pit, and afterwards from intermediate distances; the different points at which the half-battery has to come into action being marked by flags, and the officer in command of the half-battery previously informed how many rounds he is to fire from each point, and the succession in which he is to open fire from them; difficulties of ground being introduced between the points; cease firing to be sounded after a certain time; upon which the damage to the pits and dummies fired against, to be carefully noted, as well as the amount of ammunition expended; the other half-battery should then in a similar manner fire at the pits and dummies of the first; the commanding officer to decide which half-battery had suffered most; the detachments of the other to compete among themselves afterwards for a prize, or, the three detachments, whose pits had suffered least, might, irrespective of the half-battery to which they belonged compete for a prize, shooting a few rounds each at unknown distances at a target.

By a competition of this sort every non-commissioned officer and man, while performing his own duties, would have an equal interest in the success of the detachment.

Casualties among horses and men, damages to carriages, &c., might be supposed to occur at certain times during the contest between the half batteries, in such a manner, that upon the means taken to remedy the mishap, the amount of fire to be brought against the enemy would depend; and so the whole efficiency of the detachment be tested by the effect of the fire of the gun on the object to which it might be opposed.

6. That a money prize be divided between every non-commissioned officer, gunner, and driver of the successful sub-division (pro-

portionally to their rank and duties ; any individuals unfavorably reported on to be excluded from participation).

7. That when possible the services of an Instructor of Gunnery be made available for superintending the instruction in gunnery proper, and the *instructional* portion of the practice.

V. Q. P.

1st May 1873.

82



